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COMPUTERWORLD

INSIDE

Heavyweights plan grand schemes

IBM blueprint to automate data centers likely

BY ROSEMARY HAMILTON
CW STAFF

IBM, which has grown fond of the blueprint approach to addressing key information systems concerns, has indicated that data center automation will be its next big concept.

IS managers and observers contacted last week said IBM has sketched out an operations automation structure that is under development and could be made public later this year.

This automated operations blueprint will eventually provide a framework for users to manage the nuts-and-bolts work of a data center. Users and observers likened this to the other concepts IBM has already roiled out, such as Systems Application Architecture, AD/Cycle and system-managed storage. The similarities, they said, are that it will provide the big picture, offer guidelines and allow other vendors' products to participate in the plan.

Oil and vinegar

Hierarchical SNA and IBM's peer-based communications products need to be shaken up a bit to flow smoothly. Page 131.

The goal is to offer a consistent approach to operational procedures and management and eventually integrate it with IBM's application development and storage architectures, observers said.

IBM has indicated that a direction statement is on its way, said Arnold Farber, president of Farber/LaChance, Inc., a data center automation consulting firm and a member of the unattended operations committee of

Continued on page 131

Computer Associates strategy will embrace multivendor architectures, focus on integration of acquired products

BY AMY CORTESE
CW STAFF

Computer Associates International, Inc. has spent the last few years scooping up a large portion of the software industry. Now the world's largest software company will try to convince customers that it can bring order to its diverse product offerings.

Next Monday, CA plans to announce a far-reaching statement of architectural direction that is aimed at integrating its many products through common services and shared technologies. Customers and analysts briefed by CA said the plan — dubbed CA '90s — is long on direction and short on details but will be welcomed by users anxious for clarification of CA's strategy.

CA will outline five principles that will guide development of its architecture, including endorsing and expanding on individual architectures and standards such as IBM's Systems Application Architecture and Digital Equipment Corp.'s Network Application Services, according to those who were briefed.

While the CA architecture will embrace IBM's SAA and AD/Cycle development scheme, including the upcoming repository, it is said to also include support for a range of environments, including DEC's VAX, PC-DOS and OS/2. Eventually,

Continued on page 133

Moment of truth?
Computer Associates will unveil a strategy designed to fit recent acquisitions into one grand plan

1986	1987	1988	1989
Isaco IBM and DEC VAX accounting applications	**Software International** Masterpiece series of accounting applications	**Uccel** Data management and security products; banking applications	**ADR** DBMS; fourth-generation language	**Cullinet** DBMS; VAX software; vertical applications

LANscape laced with minefields

BY JOANIE M. WEXLER
CW STAFF

Overzealous use of trendy local-area networks could undercut the benefits of sharing computer resources with unexpected costs and administrative headaches if user needs are not thoroughly evaluated up front.

"When considering implementing a LAN, your first inclination should be 'don't do it,'" asserted Bill Riess, a senior engineer at Commonwealth Edison in Chicago. "Technophobia isn't necessarily bad in that automating a function with a LAN might add a level of complexity you don't need."

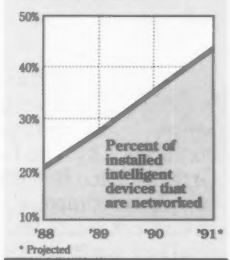
Riess has chosen a standard companywide platform for LANs and is now requiring departments to demonstrate a business need for their implementations.

Steve Spanier, a principal consultant at Netrends, a market research firm in Pleasanton, Calif., said he considers Riess' advice extreme but acknowledged that "there is a problem with sloppy purchase habits." Spanier advised users to be sure the LAN software they buy supports their needs at all levels.

"For example," he said, "performance and applications can be great, but maybe the

Continued on page 14

All tangled up
The increase in network desktop systems is causing managers to evaluate LAN purchase procedures



CW Chart: John York
Source: International Data Corp.

Windows blurs OS/2 developers' vision

BY PATRICIA KEEFE
CW STAFF

BOSTON — The battle between Microsoft Corp. and developers that snubbed the Windows environment to bet their futures on OS/2 appears to be over. With the pending arrival of Windows 3.0 and an anticipated delay holding up OS/2 Version 2.0 until 1991, OS/2 supporters are biting the bullet and promising Windows support through gritted teeth.

OS/2 stalwarts Wordperfect Corp. and Lotus Development Corp. maintain that Windows will not ease training or hardware migration costs but will instead require the same investment as OS/2. Still, it is clear that the glint of an allegedly cheaper Windows 3.0 has attracted some of their customers.

Both developers co-sponsored an OS/2 pep rally with IBM and Microsoft last week in Boston. In later interviews, however, Wordperfect and Lotus officials said they are "reassessing" their software strategies. Spokesmen for both said they believe OS/2 is the platform of the future, resignedly adding that if customers require it, they will support Windows.

Customers who had previously expressed interest only in OS/2 are increasingly showing interest in Windows, said Andre

Continued on page 4

IN THIS ISSUE

Quotable

"When considering implementing a LAN, your first inclination should be 'don't do it.'"

BILL RIESS
COMMONWEALTH EDISON

On evaluating your need for a LAN. See story page 1.

Notable quotables from the handouts at a recent conference by The Ledgeway Group: "Taco Bell is not a Mexican phone company"; "People will accept your idea much more readily if you tell them Benjamin Franklin said it first"; "Never try to teach a pig to sing. It wastes your time and annoys the pig"; "The scenery changes only for the lead dog"; "Whatever you think it's gonna take, double it. That applies to money, time and stress"; "If everything seems to be coming your way, you're probably in the wrong lane"; "It doesn't matter if you win or lose, until you lose (Yogi Berra)"; "Interchangeable parts won't."

The attraction of non-Microsoft desktop environments. Page 35.

Joyce Ravid

CIO William Anderson takes Prudential-Bache to technology's leading edge. Page 29.

EXECUTIVE BRIEFING

■ **Get ready for more blueprints.** You already have the IBM grand plan for applications development and storage management. Now, IBM is dropping hints that a structure to govern operations automation is under way, and a statement of direction could be out by year's end. Computer Associates International, Inc. also plans to present an architectural direction to unite its collection of software through common services and shared technologies. **Page 1.**

■ **Before you try to buy business recovery insurance,** which covers profits lost in a disaster, you may want to take a second look at your recovery plan. Seeking more than a secure data center, insurers are also looking for a plan that will ensure the continuation of business. In some cases, information systems is coordinating with other departments to formulate a plan. In others, hot sites are playing a more diversified role. Meanwhile, some companies are cashing in on a more cost-effective means of electronic vaulting. **Page 81.**

■ **Users help users** with routine support tasks in an innovative support program at Corning, Inc. A pilot program at the manufacturer's headquarters in Corning, N.Y., has proven so successful that Corning is now bringing it to other parts of the corporation. **Page 99.**

■ **The departure of Michael Heschel,** former IS chief at Baxter, set in motion more change for the firm, which plans to revamp IS and decentralize. With no plans to replace Heschel, the goal is to push responsibility out to the business units. **Page 7.**

■ **Out on the picket lines,** tension runs high for Greyhound Bus Lines, but IS has its share of stress, too. The IS team is headed up by Rick Murphy, who arrived just weeks ago. Nonetheless, he is moving ahead with a long-term plan to manage terminals and bus routes. **Page 8.**

■ **Wisconsin's first big computer crime case** could be played out soon. A judge ruled that programmer Brian Corcoran will go on trial, charged with destroying computer data and causing more than $2,500 in damage. He is said to have used a time bomb in a program he wrote on contract. Corcoran claimed he had only been repossessing his property because he received no payment for his work. **Page 10.**

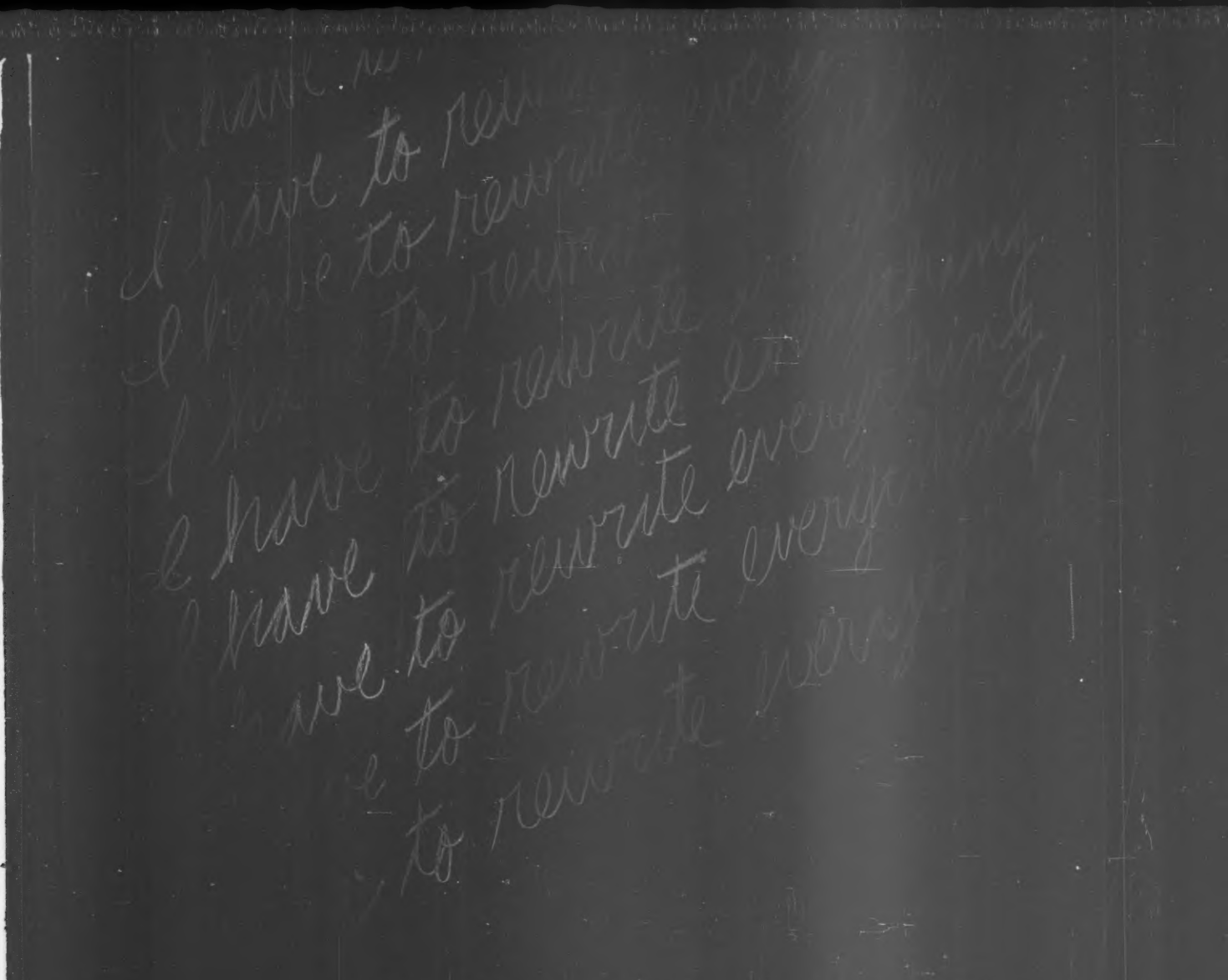
■ **Jim Yoakum, a former IS executive** at Marriott, moved to a top IS slot at Quality Inns. Yoakum said Quality Inns, a smaller outfit than Marriott, will give him more hands-on work. **Page 12.**

■ **Some users won't wait** for the end of the OS/2 vs. Unix battle for desktop supremacy. They want their needs addressed now, and as a result, are moving to alternative microcomputer operating systems. **Page 35.**

■ **It's getting there.** IBM's newest DB/2 logs in with a 7% to 20% improvement over the previous version, according to the company's Red Book, an IBM publication of DB/2 test performance data. **Page 25.**

■ **Neal Lassila, director of IS** at Empire of America Relocation Services, is determined to learn his company's business as a way of making improvements in IS. He often tags along on sales calls. **Page 75.**

■ **On-site this week:** Prudential-Bache gets a big boost for batch processing with a data compression option for IBM 3480 tape drives. **Page 29.** Chevy Chase Bank builds an OS/2-based front end for its host-based mortgage processing applications and improves its time-consuming loan approval process. **Page 37.** Chevron plans to install a more advanced link for its tanker fleet and land operations to enable faster communications, cost reductions and safer oil transport. **Page 69.**



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CORRECTION

Microsoft affirms OS/2 32-bit code capability

A page 1 story in the April 16 issue of *Computerworld* incorrectly stated that Version 2.0 of Microsoft Corp.'s OS/2 operating system is unlikely to include any implementation of the 32-bit advanced architecture. Additionally, the story may have caused readers to inaccurately infer that Version 2.0 would not support the 32-bit flat-memory model of the Intel Corp. 80386 and I486 microprocessors.

Microsoft confirmed statements in last week's story that Version 2.0 may not ship by its year-end target date. However, company officials reiterated that Version 2.0 will provide 32-bit programming interfaces, allowing software developers to write applications to use the 32-bit addressing and 32-bit flat-memory model capabilities of the 80386 and I486 chips. Earlier versions of OS/2 were based on the design of the 80286 microprocessor, a 16-bit architecture.

According to Paul Maritz, vice-president of advanced operating systems at Microsoft, OS/2 Version 2.0 will also support demand paging, a method of managing large programs that do not fit well into available memory, as well as real-mode emulation of MS-DOS, which provides the ability to run multiple DOS applications concurrently.

Maritz said that most OS/2 code in Version 2.0 has been rewritten in 32-bit code, including the operating system kernel and memory management subsystem. The newer version will retain some 16-bit code needed to support older 16-bit applications and 16-bit device drivers.

Microsoft does intend to develop a future, "portable" version of OS/2 designed for other hardware instruction sets, such as reduced instruction set computing architectures. According to Microsoft, quotes attributed in last week's story to Peter Neupert, senior general manager for OS/2, with regard to a full 32-bit version of OS/2, were made in reference to that future version of the operating system.

Has Wang got deals for you

Miller invites complaints via free fax machine

BY MARYFRAN JOHNSON
CW STAFF

LOWELL, Mass. — The only things missing were the free steak knives and the solar calculator.

But that didn't stop Wang Laboratories, Inc. from rolling out a barrel of repackaged systems, new services and customer satisfaction guarantees last week, cutting prices on its VS 5000 line and throwing in a free facsimile machine for new owners of midrange VS 8000 and high-end VS 10000 minis.

Why the new fax machine? Wang President Richard Miller will be asking new customers to fax directly to him complaints about their new boxes.

"I wouldn't hesitate to call him, even without the fax machine," said Tom Haynes, manager of factory support procurement at Raytheon Corp.'s Missile Systems Division in Andover, Mass.

Haynes and several colleagues recently visited Wang headquarters to meet with the research and development staff and present Raytheon's "wish list" of system improvements. Miller sat in on the meeting for 1½ hours, Haynes said.

The four repackaged VS 5000 models in 12 new configurations, ranging in price from $12,000 to $125,000, are available immediately.

"This is not a fire sale to dump inventory before a new model comes out," stressed Dave Strohmeyer, product manager for the VS line.

Miller used the announcement to underline Wang's faith in the VS line. "Wang will re-engineer the VS from a closed proprietary platform to an open/server environment," he said.

Among the company's development priorities in the 1990s, Miller singled out the following:

- Emphasis on larger, more powerful VS systems, with new high-end machines in early 1991.
- Improved communications capabilities and migration to international standards, enabling the VS to serve as a multivendor integration platform.
- Operating system enhancements to support more users and improve imaging capabilities.

The improvements to the systems include expanding base memory from 2M bytes to 4M bytes on Models 40 and 50 — at no additional cost — plus increasing hard disk capacity from 72M to 145M bytes.

OS/2

FROM PAGE 1

Peterson at Wordperfect and Frank King, senior vice-president of Lotus' Software Business Group.

"IBM is realigning its OS/2 strategy," said Peterson, noting that IBM will now support Windows. "We bet the whole company on OS/2; this could kill us."

"I think the [Intel Corp.] 80386SX class will probably be split between Windows and OS/2," King said. "I think it's unfortunate, but it's a fact."

With Windows 3.0 slated for a May 22 delivery and promising a similar look and feel to OS/2, both executives could not estimate when OS/2 will achieve critical mass. First announced in April 1987, Microsoft and IBM had predicted widespread use of OS/2 by now.

Window for Windows

More devastating to developers was the news that Microsoft may not meet its target of shipping OS/2 Version 2.0 by the end of 1990. That could provide Windows 3.0 with a substantial window of opportunity in which to make headway with undecided users.

It does not look good for a 1990 delivery of 2.0, according to King. The delay is "either a marketing ploy, or [Microsoft's] development team is out of control," he added.

Although users can purchase the 1.2 version of OS/2, developers such as Richardson, Texas-based Micrografx, Inc. maintain that 1.2 is crippled by a lack of device drivers — particularly for printers.

Peterson said he finds it particularly suspicious that OS/2 would be lacking in such a basic but critical area. In contrast, he promised that an upcoming OS/2 version of Wordperfect 5.1 will support 1,000 printers.

Peter Neupert, senior general manager for OS/2, admitted at last week's OS/2 rally that Microsoft had fallen down in this area and pledged to rectify the problem.

DOS support improved

Another shortcoming is OS/2 1.2's limited support of DOS applications, which is supposed to be corrected in Version 2.0. King took umbrage at what he said is a Microsoft marketing strategy to link correction of deficiencies in 1.2 to a future version of OS/2 to create more "air cover" for Windows.

"Unix has been able to run DOS for years; it's not a breakthrough technology. IBM and Microsoft could have provided that capability a long time ago," King charged.

As a result, Micrografx Chairman Paul Grayson maintains that Windows 3.0 is a better choice today for users. OS/2 Version 1.2 is simply inadequate, he said.

Although Grayson and other observers insist that Microsoft Chairman Bill Gates has been very up front about his agenda for Windows, conversations with Wordperfect and Lotus are tinged with feelings of betrayal. Efforts to reach Microsoft for comment last week were unsuccessful.

Noting that "the leadership in the OS/2 area is in a tremendous state of flux," King said it was fair to say the situation has confused users.

King added that he no longer spends much time studying IBM and Microsoft pronouncements. "Just look at their track records."

King cited what he said was an IBM/Microsoft agreement struck last November to limit Windows: "I've seen nothing but backpedaling on the agreement ever since."

Minsky's AI work lauded

Marvin Minsky *received the Japan Prize for 1990 from the Science and Technology Foundation of Japan last week in Tokyo. The MIT professor was cited for his work in the artificial intelligence field*

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Closing Arguments

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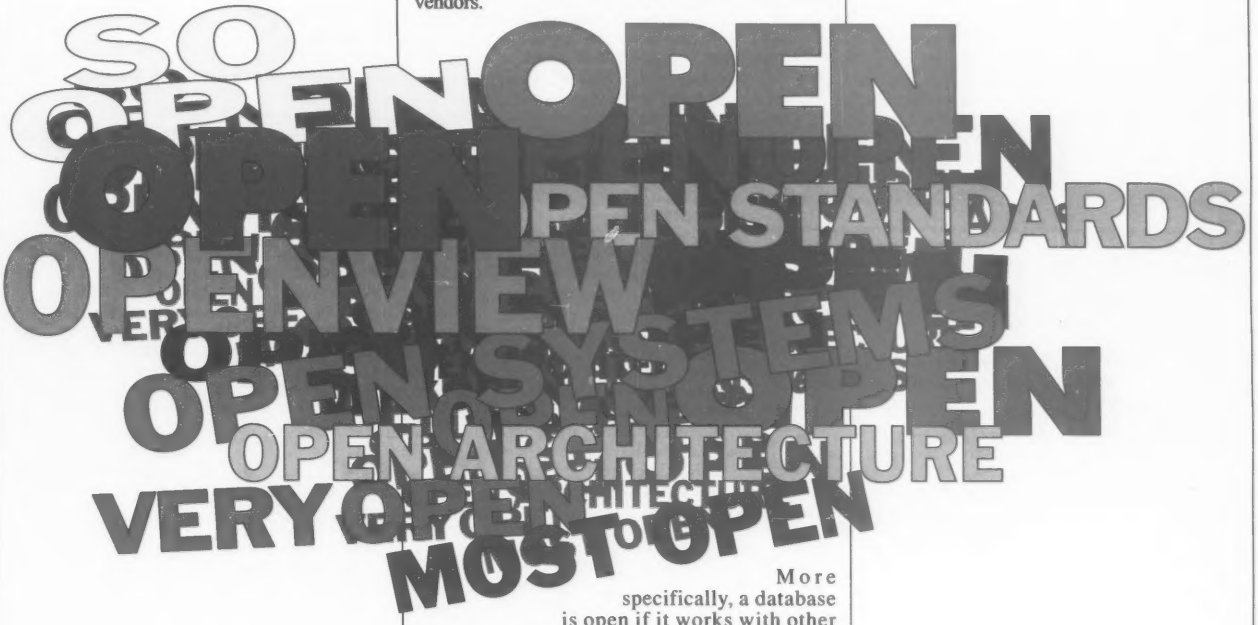
Today, some software companies claim that their software products are "open." They may even graft the word onto their product names. It is a confusing situation, but a clear definition of "open" is finally emerging.

Software is "open" only if it adheres to industry standards and works with products from other vendors.



More specifically, a database is open if it works with other vendors' databases. For example, ORACLE provides access to IBM's DB2, SQL/DS and DEC's RMS.

An open database should also work with other vendors' applications. ORACLE works with DEC's All-in-1, DG's CEO, IBI's Focus and SAS. And it supports PC and Mac software like Lotus 1-2-3, WordPerfect, Borland's Paradox and Apple's Hypercard. Even Dbase applications run on ORACLE.

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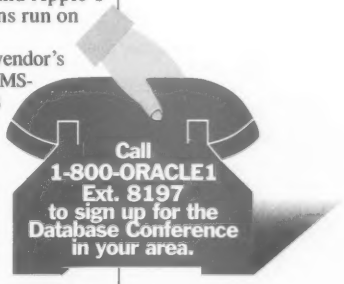

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IBM, DEC show unexpected strength

BY RICHARD PASTORE
CW STAFF

Wall Street got its own version of spring break this year, as computer industry leaders IBM and Digital Equipment Corp. let up a little on the bad news for a change.

Both companies reported revenue growth that pleasantly surprised analysts, who had expected less. Both firms also appeared to be doing better on the home front despite the fact that the domestic market generally remains in the doldrums.

"IBM really did pull off a big one for a change," said David Wu, an analyst at S. G. Warburg & Co. in New York.

The industry leader posted 11.4% growth on sales of $14.8 billion. It also logged 9.2% growth on profits of $1 billion vs. the first quarter of 1989.

DEC's results, in light of earlier warnings of a possible loss, also had analysts cracking half-smiles. "It was far better than I was looking for," said Dean Witter Reynolds analyst Jay Stevens, who had feared a revenue decline of as much as 1%.

Instead, DEC posted a 4% hike on sales of $3.3 billion. However, the company continued the downward slide that started last year; year-to-year net income fell 90% to $24.9 million.

DEC's earnings were hammered by a restructuring charge of $150 million stemming from employee separation bonuses. Without the charge, the firm would have earned $174 million.

Both IBM and DEC reported gains in U.S. business. "Clearly, IBM's domestic business is beginning to do well after two years of being in the doldrums," said Casey Stern, an IBM watcher at Altman Brenner Wasserman & Co. in New York.

IBM's U.S. market grew only 1.7% in the like quarter a year ago; this year, domestic sales grew 8% to 9%, Wu estimated.

Mainframes, high-end disk drives and personal computers helped power IBM's advance, the firm said, while the midrange Application System/400 experienced slower growth.

Right at home

As with IBM, DEC's domestic sales showed unanticipated strength. "U.S. revenue was up for the first time in four quarters," said Stevens, who estimated a 4% increase over last year's first quarter. The company also noted that it has shipped the first of its VAX 9000 systems (see story at right).

However, analysts were not so dazzled by IBM and DEC's tidings that they threw caution to the wind. "Is IBM's turnaround in the U.S. for real, or is it just a blip?" Wu asked. "It takes more than one quarter to turn a company around."

A number of observers noted that the first quarter of 1989 was particularly weak for IBM, so the percentage growth may not be as heartening as it appears. "The next quarter will be a tougher comparison," Stern said.

IBM's report contained some other troublesome elements. Despite the revenue growth, pretax margins showed only minuscule improvement.

"If you can't get margins up with 11% revenue growth, that tells me IBM needs to get its head count down in the U.S.," Wu said. He noted that the cost savings from the firm's proposed 10,000-employee reduction will not be felt until the second half of the year.

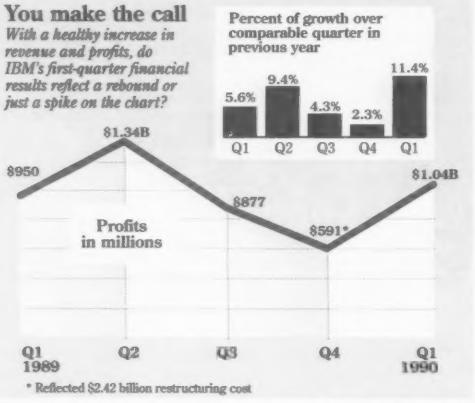
DEC foreshadowed the possibility of another restructuring charge.

"Further opportunities for cost savings are being investigated, and there may be additional restructuring charges in the future," said James Osterhoff, vice-president of finance.

Analysts said DEC will likely expand its severance program to other plants and take another charge against earnings in the June quarter. "But then, I assume it will be over," Stevens said.

You make the call

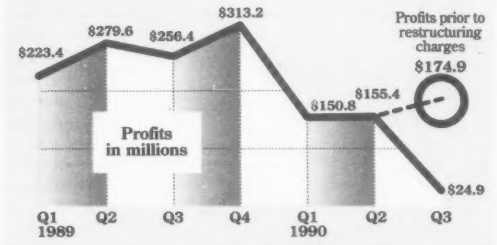
With a healthy increase in revenue and profits, do IBM's first-quarter financial results reflect a rebound or just a spike on the chart?



CW Chart: John York

DEC in the '90s

A $150 million restructuring charge in the third quarter sharply pulled down DEC's already lagging profits



CW Chart: John York

Navy to field-test VAX 9000

So far, the only VAX 9000 to arrive at a customer site will not help Digital Equipment Corp.'s bottom line. The system is a field test unit delivered three weeks ago to the Naval Underwater Systems Center in Newport, R.I.

"We're just doing general testing, comparisons to determine how this stacks up against what we already have," said George Bain, director of information systems for the U.S. Navy installation, which is staffed by civilians conducting research in submarine combat control systems.

The IS division includes several Vaxclusters and a Cray Research, Inc. X-MP28 supercomputer, all of which are used for in-house scientific applications. "So far, [the 9000] is working like a champ. We're very pleased with it," Bain said.

The VAX 9000s are due to ship by June, a DEC spokesman said. They are assembled at DEC facilities in Mountain View and Palo Alto, Calif.

Analysts said they believe DEC has from 100 to 150 orders for the new mainframes, but the firm would only confirm a handful of them. Organizations that ordered the first uniprocessor VAX 9000s include Chrysler Corp., Cornell University, the Associated Press, Security Pacific National Bank in San Francisco, Pennsylvania State University, MCI Communications Corp., the University of Pittsburgh, Esca Corp. in Seattle and Litel Telecommunications Corp. in Columbus, Ohio.

Sales slide has Ashton-Tate speechless

Software firm acknowledges it must put Dbase IV where its mouth is

BY CHARLES VON SIMSON
CW STAFF

TORRANCE, Calif. — When things started going bad at Ashton-Tate Corp., there were lengthy explanations of why the situation wasn't really as bad as it seemed. However, when the company reported last week that it lost $1 million during the first quarter of 1990, explanations were eerily absent.

Even Ed Esber, Ashton-Tate's typically expressive chairman and chief executive officer, had to concede that there is little left to say, except that sales were down. Ashton-Tate must ship a clean version of Dbase IV 1.1 that sells in high volumes in order for the company to begin to grow again.

"Customers have delayed purchases until Version 1.1 is ready," Esber said. "That trend will continue until we ship the product." Esber would not say when Version 1.1 will ship, saying only that testing continues to progress.

However, analysts said that for the survival of the company, time is of the essence.

As Ashton-Tate delays, customers are not simply waiting for the new product to ship. "At this point, they have got to get something out the door," said Nancy McSharry, an analyst at International Data Corp. in Framingham, Mass. "Customers have been waiting for Version 1.1 since January."

The Dbase PC database product line, which accounts for about 70% of Ashton-Tate's revenue, has had crippled sales because of quality problems in Dbase IV Version 1.0, as well as lack of support for the SQL Server database engine, which allows for communications with mini and mainframe databases. Version 1.1, aimed at cleaning up the quality problems and including SQL Server support, is still in development.

The result of the problems and delays is that the firm's first-quarter 1990 revenue of $57 million is down from $89.8 million a year ago and $62 million for the fourth quarter of 1989. While in the past three quarters Esber has attributed weak revenue to inventory adjustments and cyclical problems, he attributed first-quarter 1990 weakness to reduced revenue from slower sales. Cost control measures have stemmed the losses, which peaked at $19.4 million for the third quarter of 1989.

McSharry said that while market research numbers do not yet show a critical erosion of Ashton-Tate's original 45% share of the PC database market, Borland International's Paradox and Gupta Technologies, Inc.'s database products have begun to make strong inroads into Dbase sites.

"If Ashton-Tate doesn't hustle, the damage could be irreversible," she said.

Dataproducts agrees to sale

WOODLAND HILLS, Calif. — After spending more than a year fending off hostile suitors and hammering out a major reorganization, Dataproducts Corp. placed its fate in the hands of two Hitachi Ltd. affiliates, which agreed to buy the printer maker for $160 million last week.

Chief Executive Officer Jack Clark said the decision to sell was prompted by a hostile takeover attempt by investment group DPC Acquisition Corp. that began in December 1988. "We were looking for a buyer that would provide more value for the shareholders than would have been realized in that transaction," he said.

The $353 million firm was No. 1 in the line-printer category with 32% of the worldwide market in 1988, the latest year for which figures are available from International Data Corp. in Framingham, Mass.

The joint buyers, Hitachi Koki Co. and Nissei Sangyo Co., produce and market power tools, printers and calculators. The firms will form a joint venture corporation for the purposes of the acquisition.

Focus buys into co-op scheme

Real-time mainframe database access a prime feature

BY SALLY CUSACK
CW STAFF

NEW YORK — Presenting users with transparent personal computer-to-mainframe cooperative processing capabilities, Information Builders, Inc. last week unleashed PC Focus Release 5.5 with Direct/Connect.

Billed as a complete application development and decision support environment, Release 5.5 runs on DOS, OS/2 and all major local-area network platforms, the vendor said, and provides PC applications with real-time access to most mainframe databases, including Focus; IBM's DB2, IMS and SQL/DS; and Computer Associates International, Inc.'s IDMS.

According to Bryce Segar, president of Infinity Data, Inc. in San Antonio, the product basically downsizes mainframe Focus applications and puts them on the PC for updating and data manipulation. There are five levels of security within Focus, he said, and it is the responsibility of the database administrator to assign access levels on the PC platform.

Using PC Focus 5.5 with Direct/Connect requires Focus installation on the mainframe or host system. The focal point of the latest release is the Direct/Connect function, which uses any IBM VM or MVS-based mainframe as a database server and allows PC applications to access both Focus and non-Focus data as if it were stored on a local hard disk.

"It allows our PC users to work on mainframe data, and they have access to that data almost instantaneously," said Miranda Walker, a systems analyst at British Columbia Telephone Co. in Vancouver. Although the telephone company, an IBM 3090-400E site, does not have the software installed on a production basis yet, it has conducted trials with files using less than 1,000 records, she said.

In addition to mainframe Focus, other requirements for Direct/Connect include the Focnet server kernel and the Direct/Connect protocol interface.

PC Focus 5.5 also offers a revamped user interface, which reportedly provides pull-down menus and character-based windows, as well as an integrated application debugger for source-level debugging capabilities.

The product requires an IBM PC or compatible with a hard disk and 640K bytes of random-access memory and is now shipping at a price of $1,295. Pricing for the mainframe components varies depending on the host environment. Direct/Connect, shipped free with Release 5.5, runs in an LU2 environment. An LU6.2 version, called Gateway/Connect, is slated for August.

Baxter retires Heschel's jersey

BY ALAN J. RYAN
CW STAFF

DEERFIELD, Ill. — Baxter International, Inc. is revamping its information systems team and, in a manner of speaking, is retiring the jersey of its former top player, Michael S. Heschel.

The departure of the top IS executive from Baxter late last month has spurred the company to decentralize its IS group, according to a company official.

Joe Madonia, vice-president of human resources for the Information Resources Group, said last week that Heschel's vacated post would not be filled. "This is all part of our stated objective to move accountability and responsibility closer to the business groups," Madonia said.

The decentralization has not yet been fully implemented, Madonia said, but it began shortly after Heschel's departure. Heschel is now chief executive officer and chairman at Security Pacific Automation Corp. in Los Angeles [CW, April 2].

Most of Baxter's approximately 500 IS workers will feel very little impact from the decentralization, Madonia said, and no jobs will be lost. "It will be almost invisible on a day-to-day basis. Most will continue to work in the same facility they have been at, and most will even remain at the same workstation," he said. The IS group was among those areas hit by company-wide layoffs last month, with as many as 300 people in IS being affected at that time.

Even for those impacted by the decentralization, the effect will be minimal, Madonia added. Some may have to change the location of their offices within the same building, and some may possibly be moved from the Deerfield location to another nearby Baxter facility.

Baxter's IS group held a series of meetings on a departmental basis to explain changes to IS staff, Madonia said. "Some people are withholding judgment to see how it all works out, but overall, people feel comfortable with it," he said.

The decentralization will involve moving three IS subgroups: The operations and services organization will now report to the company's global business unit; the systems development organization will now report to the company's hospital business unit; and the business technology organization will report to the corporate offices, Madonia said.

NEWS SHORTS

Exley: We're for real

At NCR Corp.'s annual meeting last week, Chairman and Chief Executive Officer Charles E. Exley Jr. announced that the company will be a serious player in the cooperative computing market. The Open Cooperative Computing strategy will allow NCR customers to make an orderly transition from today's computing platforms to tomorrow's while preserving current investments, Exley said. He identified cooperative processing as the sixth era of business information processing, following batch processing, time sharing, departmental processing, personal computing and networking.

AT&T, GEIS shake hands

AT&T and GE Information Services (GEIS) last week announced the connection of their electronic-mail services using the international X.400 standard. AT&T Mail already has connections to the E-mail systems of MCI Communications Corp., Western Union, Dialcom and Telenet Communications Corp. GEIS connects to Western Union and is working out connections with MCI and five other national and international E-mail services.

Tandy offers trade-in deal

Tandy Corp. customers aching for a new Intel Corp. 80386-based personal computer can trade in selected early models of Tandy and Radio Shack PCs for a $500 credit toward a new box. In addition, leasing customers will receive three-year carry-in service contracts free of charge on all leased 386 computers and peripherals. The offer applies through the end of June.

Nynex, Sun join forces

Nynex Information Solutions Group, Inc. and Sun Microsystems, Inc. announced last week they are working together on large-scale systems and network integration projects, both domestically and internationally. The companies said they will concentrate their efforts on the banking, insurance, brokerage/investment, manufacturing and health care industries. Nynex will act as a Sun Commercial System Integrator and will provide customized applications and network integration. It will also custom-design and install Sun Scalable Processor Architecture-based products. The companies will jointly conduct sales, marketing and development.

AT&T earnings below expectations

AT&T reported first-quarter revenue of $8.9 billion last week, up 2.7% over the same period last year. Net income was up 12.5% to $668 million. Earnings were a bit below analysts' expectations, partially because of the costs associated with the nationwide network crash earlier this year. Though it claimed demand for its mini and personal computers were strong, product sales overall grew only 1.2% for the quarter.

Jobs hints at new sites

Next, Inc. President Steve Jobs said Pittsburgh and Cambridge, Mass., are the leading locations for a satellite research center that Next hopes to establish next year. During a visit to Pittsburgh to open the Redwood City, Calif.-based Next's eastern regional sales office, Jobs rattled off points in favor of the city, including affordable housing and the presence of Carnegie Mellon University, which developed the Mach operating system used by Next's computer.

ALR upgrades go upscale

Advanced Logic Research, Inc. (ALR) last week expanded its upgradable offerings with two new high-end boxes. The Business Veisa 486/25 is based on Intel's 25-MHz I486 chip and features a design that permits an upgrade to the 33-MHz 486 chip; a model with a 40M-byte hard drive will cost $6,500. ALR also unveiled an upgradable 33-MHz 80386 system, priced at $5,000 with a hard drive.

More news shorts on page 132

Greyhound IS rolls despite strike

BY SALLY CUSACK
CW STAFF

DALLAS — Behind the picket lines and away from the charges and countercharges of a boiling labor-management confrontation, the information systems group at Greyhound Bus Lines is setting its long-term plans under the guidance of a director who has been on the job for little more than a month.

With 6,300 employees on strike, the 76-year-old company is shackled by a contract dispute and a union strike during which shootings have occurred and allegations of sabotage have surfaced. Prior to the strike, the bus line served about 9,500 locations.

Murphy *expects 'sweeping' IS changes in near future*

Richard Murphy, senior vice-president of information technology as of March 19, is deploying a new strategic planning model that allows the company to generate and evaluate strategic route alternatives.

Called Smart, the Strategic Model for Analysis of Routes and Terminals, it runs on a Compaq Computer Corp. 33-MHz Intel Corp. 80386-based machine and was designed to aid in locating terminals and developing routes the company would like to serve, Murphy said.

It is the first major weapon to be stockpiled in Greyhound's new information technology arsenal. Close-mouthed about details, Murphy indicated the company will see some sweeping changes with regard to IS in the very near future, including two-way mobile satellite communications between dispatchers and drivers. The company will also be moving to a real-time distributed processing environment.

"I see the mainframe functioning as a server to several workstations and terminals providing real-time, number-crunching information," Murphy said. "The Smart model basically looks at passenger demands for transportation, based on information it receives downloaded from the mainframe."

Greyhound maintains an IBM 3090 Model 200E in its Des Moines office, which is connected to the Smart system in Dallas over T1 lines.

Smart system software was developed in C and Fortran, and it is a custom program developed at Greyhound in conjunction with RAM Decision Systems in De Pere, Wis.

Murphy also serves as president of RAM Decision Systems and said he sees no conflict in wearing two hats — the Smart system was developed exclusively for Greyhound and will not be sold to any other organization, he explained.

Murphy replaced Dennis Connor, the company's former senior director of IS. Connor left Greyhound on Nov. 1, 1989, after a two-year stint with the transportation firm.

The company said it expects to report a $730,000 net income for 1989, following a $2.58 million loss in 1987 and a $17.39 million loss in 1988.

"The Smart system will help us bring back the business in an orderly fashion by helping us to bring back efficient customer service," Murphy said.

DEC enters ISDN race — but with blinders on

BY ELISABETH HORWITT
CW STAFF

ATLANTA — Digital Equipment Corp. last week fulfilled its 18-month-old promise to support Integrated Services Digital Network (ISDN) communications, but in a constricted form that essentially denies the existence of ISDN communications outside of the Decnet-Ethernet world.

At the Supercomm 90 conference here, DEC announced ISDNcontroller 100, hardware and software that turn a non-dedicated Microvax II into a server that allows Decnet systems to communicate over an ISDN Basic Rate Interface link of two 64K bit/sec. channels and one 16K bit/sec. D channel for packet switching.

This fulfills a program statement made by the vendor at Decworld '88 in Cannes, France, but forces users to "do it Digital's way, which means through Ethernet," said Jon Saccente, a Houston-based telecommunications consultant.

While DEC is currently testing compatibility between ISDN-controller and various private branch exchange (PBX) systems, the vendor has yet to announce ISDN software and adapters for its VAXs, which would allow them to communicate either directly via a remote ISDN link or locally via an ISDN-compatible PBX.

While DEC is likely to provide ISDN support for its Computer Integrated Telephony host-to-PBX interface, a DEC spokesman refused to speculate as to the time frame.

Hardee's Foods Systems, Inc. is testing out ISDN links as a way to link various sites, including its nationwide store outlets, to Decnet systems at its Rocky Mountain, N.C., headquarters, telecom director Lynn Smith said.

However, Hardee's has already connected Decnet to ISDN via DEC's X.25 packet-switched router and has no current need for DEC's Microvax-based ISDNcontroller as a result, a Hardee's telecom manager stated.

DEC's ISDN announcement may have come none too soon, given that IBM's software development facility "has just bought a couple hundred ISDN lines, and is really stepping up" its development efforts, Saccente said. IBM is said to be testing an ISDN-based Token-Ring bridge, as well as an ISDN interface to its front-end processors, he said.

DEC chose to implement a Basic rather than higher speed Primary Rate Interface (PRI) on its initial server because of the greater availability of Basic Rate circuits from carriers, according to Bill Mitchell, Decnet Open Systems Interconnect wide-area network marketing manager.

DEC also sees a "general-purpose hardware platform" as more suitable than a VAX for its PRI gateway, given that the 1.5M bit/sec. interface would use up most of a VAX's resources, Mitchell added.

ISDNcontroller 100 is said to interface with ISDN services based on either AT&T's 5ESS or Northern Telecom, Inc.'s DMS 100 switches. Under the current configuration, a Microvax II can simultaneously act as a personal computer local-area network server and as a gateway between Decnet users and up to two other sites via the ISDN link, Mitchell said. Available immediately, the controller costs $4,000 for the hardware and $2,000 for VAX ISDN software.

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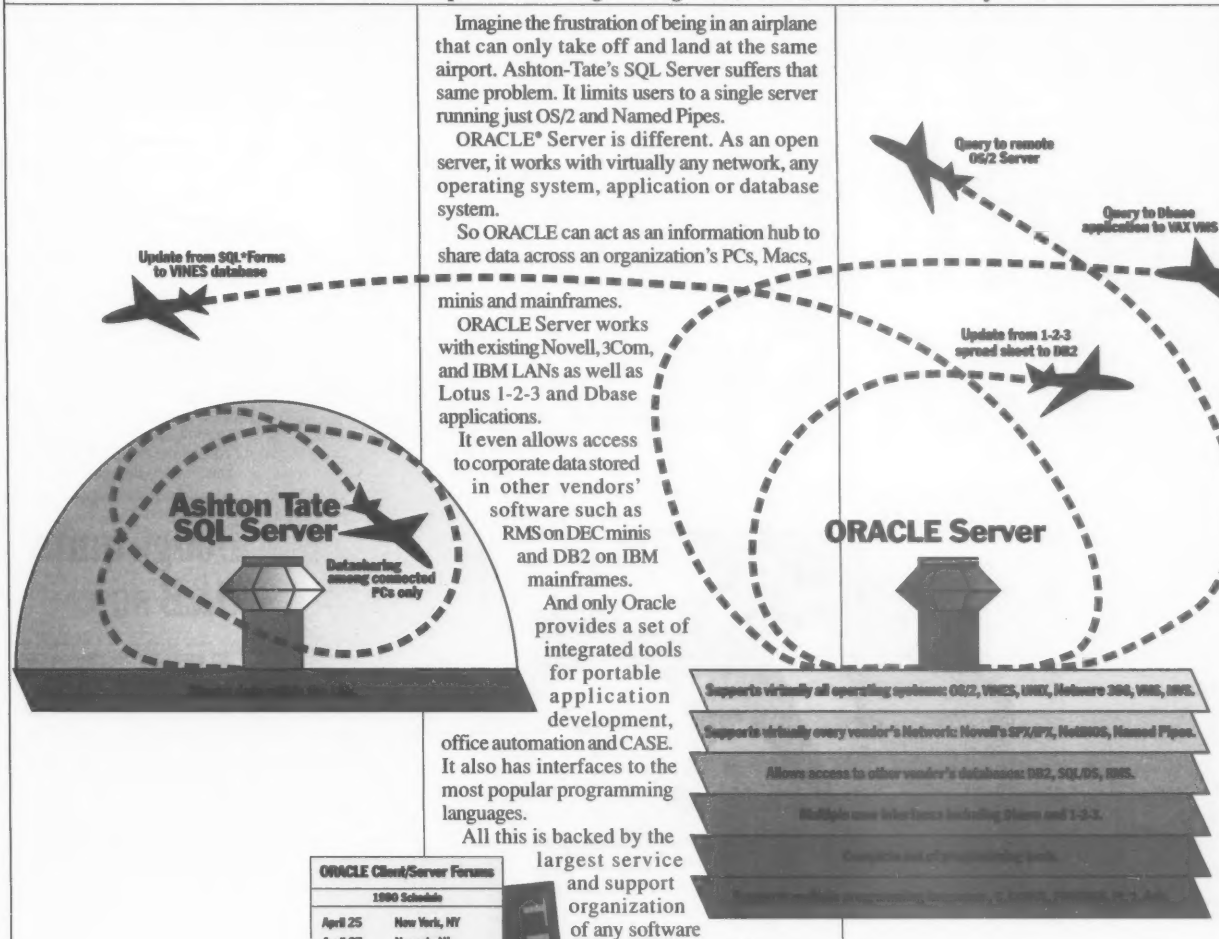

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Booby trap backfires on programmer

BY MICHAEL ALEXANDER
CW STAFF

WAUKESHA, Wis. — Computer programmer Brian Corcoran planted a time bomb in a program that he was contracted to write, and when the client refused to pay him, Corcoran pulled the pin.

"All I did was repossess my property, for which I did not receive one thin dime," Corcoran said in a recent interview.

The client and Wisconsin law enforcement officials do not see it that way, however. Earlier this month, a judge here ruled that Corcoran will go on trial, charged with destroying computer data and causing more than $2,500 of damage. If convicted, Corcoran, 41, faces a maximum five-year prison term and a $10,000 fine, in what is believed to be the first case under Wisconsin's 1982 computer crime law.

In a letter to *Computerworld*, Corcoran asserted that his case has broad implications for software publishers: "If I cannot enforce my copyrights in this case, there is not a single software manufacturer in the U.S. that will be able to either."

Lee Gesmer, an attorney at Lucas, Gesmer and Updegrove in Boston, said that Corcoran's copyright claim would probably not stand up under scrutiny by legal experts. "It does not appear to be a copyright issue but a contract issue," he said.

Corcoran admitted that he embedded a Trojan Horse subroutine, designed to erase all programs and data stored on a personal computer's hard disk, database, report generator and other programs he wrote for Mueller Consulting Services in Brookfield, Wis., in 1987. After the firm's owners balked at the amount of the bill and refused to pay him, Corcoran said, he tricked one of them into activating the self-destruct program.,

Local prosecutors acted on the complaint in November 1988, approximately one year after the complaint was filed, and charged Corcoran with destroying computer data and programs with intent to defraud.

Last July, a circuit judge dismissed the case because prosecutors failed to prove that Corcoran had intended to defraud. Prosecutors filed the new set of charges a few days later.

Dodge quits D&B suit

BY MAURA J. HARRINGTON
CW STAFF

CAMBRIDGE, Mass. — One day after he was shooed out of court without his much-desired injunction in hand, Frank Dodge withdrew the lawsuit he filed last month against his former employer, Dun & Bradstreet Corp.

By having his complaint dismissed, Dodge remains bound for one year by the noncompete agreement he signed in 1983 when Dun & Bradstreet acquired McCormack & Dodge Corp.

"D&B expects, hopes and believes that Dodge understands his noncompetition agreement for which it paid $14 million, expiring Feb. 16, 1991," said Dennis Kelleher, D&B's attorney.

Dodge's lawyer, David Godgino, said he had no comment about the withdrawal of the lawsuit.

Kelleher, however, declared, "It was clear to the defendants all along that Dodge had no case against [D&B]."

Dodge, who was unavailable for comment, is bound by the noncompete contract for one year and cannot "... engage in competition with, or own any interest in, provide any financing for, or perform any service for any business or organization which directly or indirectly engages in competition with any business conducted by [D&B] or any subsidiary or division of [D&B] in any area where such business is then conducted," according to the agreement.

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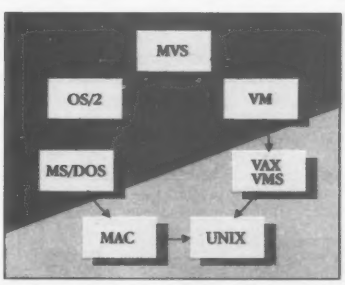

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IBM discovers glitch in SCSI adapter cards

BY RICHARD PASTORE
CW STAFF

IBM has been tripped up by its own devices — namely, the new SCSI adapter cards it introduced last month with its Personal System/2 Models 80 and 65SX. The company isolated a fault in the cards last week and temporarily halted shipments of affected PS/2 models as well as 9370 systems incorporating the cards.

The small computer systems interface (SCSI) is at the heart of IBM's push toward more competitive file server products, analysts said [CW, March 26]. Each internal SCSI card allows attachment of up to seven compatible peripherals, including printers, disk drives and other storage devices.

During data transfer operations on 9370s and PS/2 Model 80s and 65SXs, the SCSI adapters may modify data without any indication of error, IBM said. The problem is not specific to the type of transfer operation or the attached SCSI peripheral.

The fault actually lies in the hardware components on the card and potentially affects both types of IBM SCSI adapters, according to a company spokesman. The cards and PS/2s have been shipping since the end of last month.

IBM discovered the bug two weeks ago while testing the cards in 9371 Model 10s, 12s and 14s, which also incorporate the SCSI architecture. "We have not heard of any such incident in a customer-installed system," the spokesman said. The firm conducted "extensive" testing of SCSI-equipped PS/2s prior to shipping, he noted.

A hardware fix has been devised, and IBM plans to begin swapping cards in the field by the end of this month. The company would not say how long the process would take or when PS/2 and 9371 shipments would resume.

Marriott exec packs bag for Quality Inns

BY ALAN J. RYAN
CW STAFF

SILVER SPRING, Md. — Former Marriott Corp. information systems executive Jim Yoakum has taken up residence at Quality Inns International, Inc. as that company's senior vice-president of information services.

Last week, Yoakum said he left Marriott because the company was shifting its IS focus from a large, centralized staff to decentralized staffs in the business units. "In one regard, I had to work myself out of a job," he said, adding that his job at Marriott had been shifting from one of being a hands-on operator "to more of an overseer."

Quality's IS operation is smaller than that of Marriott, Yoakum said, but that will enable him to get down into the trenches. "I enjoy really getting involved in the details" of running an IS operation, he said.

Additionally, Yoakum said that while Quality and Marriott are both in the hospitality business, the two companies are structured very differently. Quality is a marketing company providing services such as advertising and marketing and providing technology services to the individually franchised hotels. Marriott, on the other hand, operates and manages hotels, Yoakum said.

"Quality is a small company; it has much smaller corporate activities, and I am right in the thick of things," Yoakum said.

The systems opportunities at Quality are many, he added. The company is currently working on a new Unix-based reservation system that will use the C language and a relational database. "Our current system is in assembly language, so we anticipate real productivity gains bringing up the new system with the C language," Yoakum said.

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LANscape

FROM PAGE 1

backup capabilities are not sufficient. You could be hung out to dry if backup was a requirement."

Tom Mack, manager of LAN operations at General Electric Co., said his company is currently re-evaluating the myriad LANs that have sprung up throughout his organization. "We need to make sure LANs serve a business function and are not just leaking money out of the corporation," he explained.

Rick Segal, technical advisor at The Aetna Casualty and Surety Co. in Hartford, Conn., noted that "some people end up with a LAN by default by trying to increase the ratio of users to peripherals." He said such users might be able to use an inexpensive switch to share a printer and avoid the larger capital investment of a network.

Riess also pointed out that "if all you need to do is share a printer," rewriting applications to run on a network could get quite costly. He noted that LAN versions of standard software packages are generally more expensive than standard versions.

Users and analysts agreed that using a LAN effectively requires an administrator to serve as a single point of responsibility for managing the network.

"Many people don't realize that managing a LAN represents more than just managing several PCs," commented Barry Gilbert, a senior analyst at TFS, Inc., a consulting company in Westford, Mass.

Ron Johnson, corporate LAN administrator at Fireman's Fund Insurance Companies in San Rafael, Calif., concurred. "Many people think that secretaries can support LANs. But you really need someone who understands the lower-level technical aspects of the network, such as operating systems," he said.

Edwin Riddle, head of the communications and network systems branch for NASA-Langley Research Center in Hampton, Va., added that addressing and routing expertise is needed for interconnected LANs.

Choosing the appropriate LAN medium is also an important factor, he said, in that having to convert cabling is a costly undertaking. Riddle said he is considering converting from thick-wire to the twisted-pair cabling now available for Ethernet because of the diagnostic capabilities and security afforded by running the twisted pair from each workstation to an intelligent central hub.

Steve Patrick, director of computing services at Bradley University in Peoria, Ill., noted that "if you put in the wrong kind of wiring, you may never trust the LAN for mission-critical applications. I've seen people do a hatchet job of wiring and pay the price for a long time, because once the wiring is in the wall, it is a capital investment."

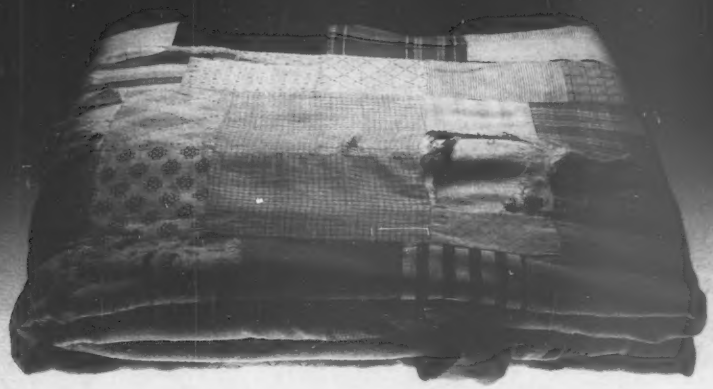
Gilbert said he knows of several companies that reached the limits of their network required costly upgrades and modifications to move up to a new tier. "These companies didn't have the expertise to handle that internally and suddenly found themselves having to pay for outside support," he said.

Memory management should be a key focus area for LAN implementors, said Mike Drips, a systems analyst at United Data Services in Kansas City, Kan.

Drips explained that LAN software eats up anywhere from 70K to 150K of DOS's 640K bytes of accessible memory, depending on the network manufacturer, so DOS users must do some math to make sure their network will allow them to run any memory-hungry programs they may have.

For example, Drips said, "you might put a LAN in for sharing a laser printer. When you're not logged onto the LAN, you're freeing up memory to run your application program. But when you boot up the LAN software so you can connect to the laser printer, that could gobble up the memory you need to run your program."

Users must also make sure the network interface cards they buy will run with their network software, according to Drips. "There are probably 10 Ethernet cards out there," he said, "but they all won't be supported by the network you choose."



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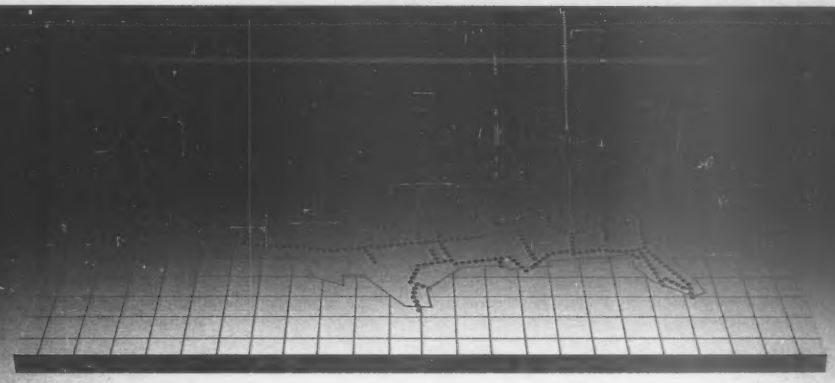

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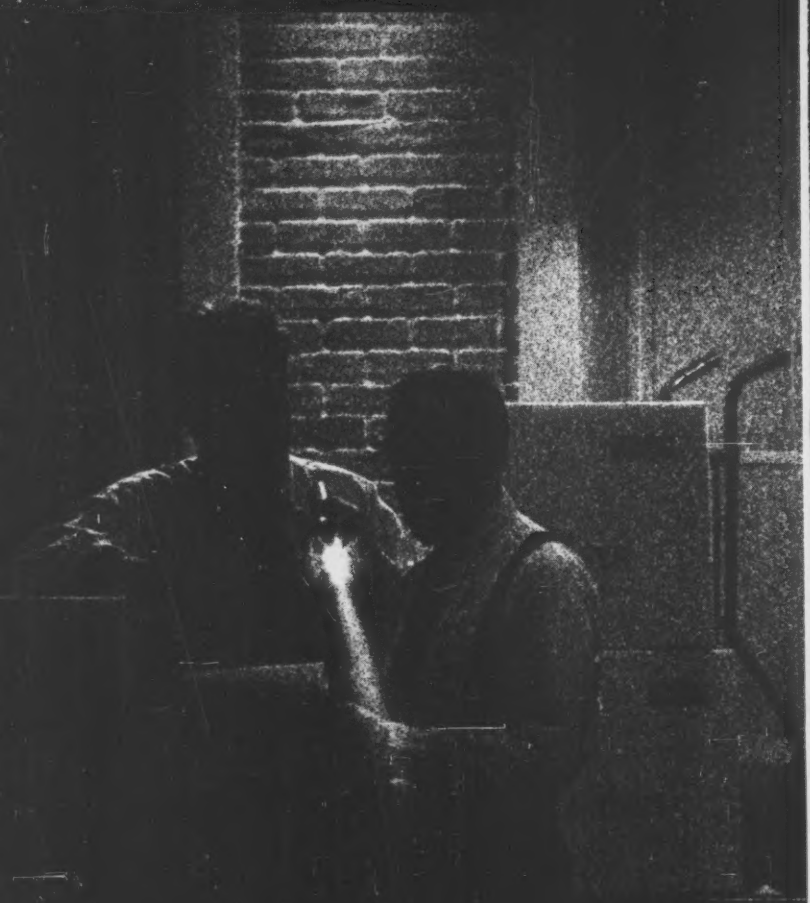

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ADVANCED TECHNOLOGY

TECH TALK

Hard sell on disk

■ The hard sell on hard disk is the latest personal computer-based system to be touted to the radio broadcast industry these days.

Computer Concepts Corp. of Lenexa, Kan., is selling a radio advertising system that enables a station to store commercials, jingles and liners on a hard disk and instantly retrieve them. The company's digital commercial system includes a 766Mbyte hard disk capable of holding up to 340 minutes of audio, digital stereo audio board and special software. The system would do away with having to rely on the manual tape cartridge systems now in use.

Computers fast as light

■ AT&T took another step forward in its efforts to develop supercomputers based on photonic technology. The company said last week that it placed the world's smallest lasers, along with lenses and mirrors, on a glass disk with a diameter of only 1 in. The device, still in the experimental stage, can be used to interconnect conventional computer chips to form a superfast optical computer capable of operating at speeds 1,000 times faster than conventional computers. The device uses AT&T's microlaser technology and diffractive optics.

Look — It's Superchip!

■ The CPUAX Superchip, developed in a joint effort between Motorola, Inc. and TRW, Inc., is the largest and most densely packed chip ever made, according to executives at both companies.

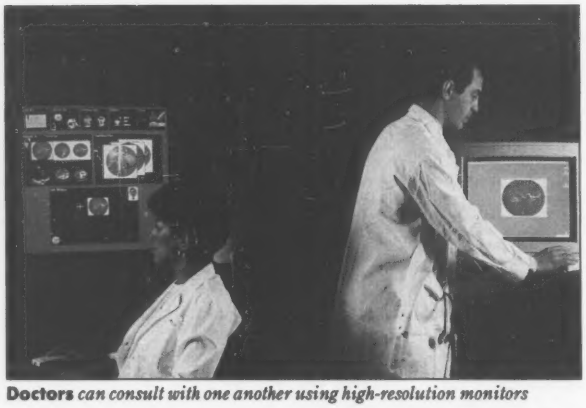
The chip measures only 1½ in. on a side, yet it contains four million transistors.

There are extra circuits on the chip that take over if any of the main circuits fail to function. The redundant circuitry was added to the chip to meet the defense-related needs of the U.S. Navy, the chip's first customer, which expects to use the chip in surveillance aircraft. The chip is not yet available commercially.

A multimedia route to better care

Media Broadband Service combines technologies to speed up access to medical records

BY MICHAEL ALEXANDER
CW STAFF



Doctors *can consult with one another using high-resolution monitors*

Within minutes after an elderly man complaining of chest pains is wheeled into the emergency room at Boston's Brigham and Women's Hospital, a physician pores over the first of several chest X-rays that will help pinpoint the cause of problem. What is unique is that the physician is not on duty at the hospital but at home, several miles away. The X-rays, as well as the patient's medical records, have been relayed by fiber-optic cable to a workstation in the physician's home, allowing her to begin treatment before she leaves for the hospital.

Four Boston-area hospitals began testing last week a new multimedia telecommunications service that they believe will make it possible to respond faster to emergencies and to give patients higher-quality care in a variety of other ways.

Brigham and Women's Hospital, Children's Hospital, Massachusetts General Hospital and New England Medical Center — as well as the Christian Science Publishing Society (see story below) — are involved in a three-year trial of Media Broadband Service (MBS), developed by Nynex Corp.'s New England Telephone company.

MBS "is a confluence of several technologies," said Paul O'Brien, president of New England Telephone, at a recent press conference at Nynex's new Applications and Services Center in Cambridge, Mass. The service combines such images as X-rays and full-motion video, voice and text into "packages" or "multimedia sessions," like sophisticated telephone conversations.

Eventually, the service will be expanded across several states and include a wide variety of applications beyond the medical field. MBS will be used to link telecommuters with company headquarters and deliver movies to consumers, among other applications, O'Brien said.

Doctors and other health-care providers can consult with one another using workstations equipped with high-resolution monitors for viewing X-rays, CAT scans and similar images. The exchange of voice, text and images can take place simultaneously, or they can be stored like electronic mail.

A second opinion

At New England Medical Center, for example, a cardiologist will be able to confer with a referring physician at a suburban medical clinic while the two are viewing the same moving images of the patient's heart. In some instances, the physicians may decide to transmit the images along with their voice-annotated observations as a package to a consulting expert at yet another site.

Medical personnel at Children's Hospital, the largest pediatric medical center in the U.S., plan to use the system for interactive consultation as well as to permit physicians off-site or with scheduling conflicts to conduct patient reviews electronically, much the same way they once made the rounds of hospital wards.

The backbone of the service is a network of fiber-optic cables that connect the trial's participants to telephone offices and the Nynex Applications and Services Center. Network software, developed by Nynex, acts as a traffic cop to control the flow of images, voice and text.

Initially, about 50 workstations will be tied into the service; later, that number will climb to more than 100, Nynex executives said. A variety of workstations will be used for the trial, though most will be workstations made by Sun Microsystems, Inc., Digital Equipment Corp. and Apple Computer, Inc. The workstations will run software developed by the individual hospitals and Nynex as well as packaged applications.

Medical personnel at Massachusetts General Hospital believe that MBS will enable them to get out from underneath the "crushing weight" of patient records, said James Thrall, radiologist-in-chief at the hospitals.

New diagnostic technology, while a boon for patients, is a headache for hospital administrators because of the variety and volume of the images that they produce. Several experts may be involved in the care of a single patient, and that means records must be duplicated and widely disseminated.

Sharing the news

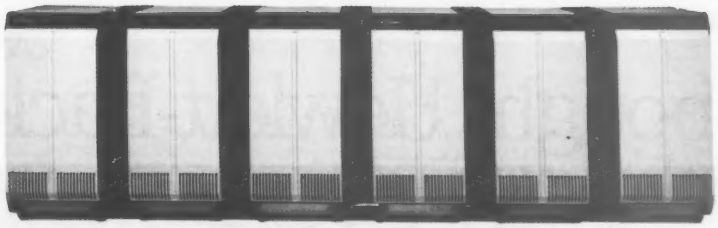
The Christian Science Publishing Society (CSPS) plans to use the Media Broadband Service developed by Nynex Corp. as a bridge between its electronic media and print operations, according to Gail Pierson, director of systems and operations.

The service will enable print, radio and television operations at CSPS to readily share images and information, whether in audio or print form, she said. "We have been interested in moving pictures and data of various sorts from one product to another, connecting radio, television and a variety of print publishing," Pierson said.

As an example, CSPS produces an evening TV show called *Today's Monitor* based on a discussion of the news reported in that morning's *Christian Science Monitor* newspaper. The show could not be planned until late in the day because the text, photos and graphics used in the newspaper were not readily available until after the newspaper was completed. Now, CSPS expects to shave several hours off the process of assembling the nightly news program, Pierson said.

"In print we will be able to have an editor participate earlier in the make-up process, see proofs and approve them on the fly," Pierson said. Page layouts and other images, once captured in digital form, can be shared between editors, artists and other staffers in multimedia sessions. Applications such as these will help reduce the critical approval and decision-making process on late-breaking news and last pages, allowing more of these stories to make it into print, she said.

MICHAEL ALEXANDER



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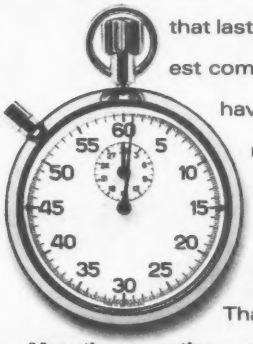

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HEWLETT PACKARD

EDITORIAL

Taking stock

ON MORE THAN one occasion here in the past, we've taken on Wall Street and its implacable predilection for hypocrisy and for generally speaking from both sides of its maw.

Most galling has been its practice of trumpeting the virtues of those companies that "think Japanese" by taking the long view with research and product strategies and then slamming the management of a firm when it momentarily stumbles along the path of quarterly financial reporting.

However, as we've said in the past, a stockbroker or analyst makes the same money whether you buy or sell a stock. This means that the business thrives in times of uncertainty, whether this uncertainty and all the anxiety it produces is real or illusory.

Despite the treasure trove of forecasting tools, indices, econometric models and the other divining rods that stock analysts have at their disposal to inject some scientific or empirical logic into their corporate assessments, daily practices clearly demonstrate that the only statistic that really matters in this regard is quarterly profit — or, more specifically, profit growth starkly measured against the comparable quarter of the previous year.

Now, this does simplify the stock analysis matter considerably and also puts it in terms and conditions we all can seemingly understand. But it's also proof that a little knowledge can be dangerous, especially if the view one has of a company and its products is colored to any great degree by quarterly hiccups and burps.

Take, for example, the surge in IBM's stock price last week after the company posted relatively strong quarterly sales and profit figures. Not only did the news help IBM's investors, it buoyed the rest of the market as well. Amazing.

What about IBM's fundamentals? Did anything IBM say or do indicate that those fundamentals — such as a weak domestic market, slowing sales of mainframes and an inability to adequately grow software and service revenues — have dramatically changed? How about the near-term prospects of heady competition from the plug-compatible manufacturers in high-end mainframe sales?

No matter. Profits are up, even more than Wall Street expected. Shazam. Apart from IBM's ability to move some things here or there to bolster this quarter or that quarter (all legal and proper), does anyone really think that a $62 billion global behemoth executes strategy on a quarter-by-quarter basis? No? Then why do some of the finest analytical minds on Wall Street act as if that is the case?

So for your personal investing, of course, view the market in all its inconsistencies. But when buying computer equipment, the smart money knows there's a lot more to life than the short-term balance sheet.

LETTERS TO THE EDITOR

Irked by disparaging remarks, hackers raise their hackles

I take exception to Douglas Barney's statements about hackers in "Weeding out virus makers" [CW, March 12]. He advocates using the word hacker as "a term of terror and disdain." All hackers are not computer terrorists any more than all writers are forgers or plagiarists.

Does he use a computer? All computer users are software pirates — lock him up. Does he drive a car? All drivers are speeders — revoke his license and confiscate his car. Does he drink milk? All child molesters were found to have milk in their refrigerators — keep him under surveillance.

A hacker is an exceptionally good computer programmer. Someone who illegally breaks into and enters a computer system is a burglar. This burglary may require the skills of a hacker, just as safecracking requires the skills of a locksmith, but would Barney call all safecrackers locksmiths?

I expect you to apologize to all law-abiding hackers, and I would hope Barney would do the same.

Richard Downer
Tacoma, Wash.

Regarding "Weeding out virus makers" [CW, March 12], Douglas Barney says "hackers" are mainly responsible for creating computer malfunctions due to "Trojan Horse" programs or whatever you'd like to call them. Working with some mainframes and many mini- and microcomputers, I've only encountered three viruses, all of which have since been terminated. Barney's analogy on "hackers" being very negative, is, in my opinion, incomplete.

Many people who are "hackers" also clean up the viruses that are started. The people who start these viruses aren't "hackers" but are instead glory seekers who desire attention from what they feel is art. I've never made a virus program, but I know how they work — to prevent future intrusions on my IBM PC AT system.

Barney could have elaborated on what most hackers do; mainly, they want to find a solution to a problem or take a present working computer system and make it as efficient as it can be.

John Kula
Grand Forks, N.D.

In "Weeding out virus makers" [CW, March 12], Douglas Barney stated that he was glad that the word "hacker" is no longer a term of endearment but is synonomous with a crazed psychoterrorist. But doesn't he know why it was a term of endearment? It was not because of a character in a movie five years ago.

Only a couple of years ago, it was a compliment and an honor for many, indicating a very sharp technical mind, a real talent for programming and a love for the craft. That is what a hacker was and is. To twist it the way it has been done by the popular media is like confusing the terms "reliable employee" with "brown-nosing yes-man." I'm not surprised that *People* magazine can't tell the difference, but you guys should.

As for descriptive vocabulary, somehow the phrase "programming enthusiast" sounds wimpy in contrast to the gritty ring of "hacker."

Sorry, guys — breaking into computers and writing a stupid virus doesn't make you a hacker. It's not that easy.

Robert Stevenson
Sunnyvale, Calif.

Not a toy

Owning a computer is not unlike owning anything that can do harm to yourself or others (such as owning a gun or automobile, for example). If you own a car or gun, you assume a fair measure of responsibility for the way the car or gun gets operated. If you fail in that responsibility, you may be charged with unethical, tortuous or criminal conduct.

We can understand the ethical requirement that we should responsibly use an object with dangerous propensities when the object is a gun or car. But when the object is a computer, no such thought crosses our minds. "Computers are not dangerous," we rationalize. "Why, computers are just toys. The kids play with them for hours."

However, computers, improperly operated, can cause us physical and psychological damage and can cause a dilution of our individual rights of privacy.

Jack Bologna
Associate Professor of Management
Siena Heights College
Adrian, Mich.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931; MCI Mail: COMPUTERWORLD.*

The means to a project's end

MICHAEL COHN

During my brief career, I have seen many projects through to the end. Regrettably, not too many were finished when I got there. Projects have a knack for getting canceled in midstream; I can think of dozens that crashed and burned. In fact, I can't think of one that didn't.

You'd think maybe one or two of us would have figured this out by now. You'd hope somebody would have wised up to the reasons why projects fail and can now avoid the trouble spots, take a project from start to finish, get a huge bonus and then not blow it all in the stock market.

However, in case there's a shortage of project gurus, maybe I can help. I'm going to let you in on a couple of pointers, guaranteed to help you manage, salvage and survive projects. While everyone else is lining up excuses and pointing the finger, maybe you can step in, save a project and be a hero.

Replace somebody. Project leaders are like tires; replace them once in a while. A lot of them are bald, too, but that's another story. Does your project seem doomed? Out of control? Give it a kick in the pants by bringing in a few new faces. Then let one or two burned-out managers leave. Just make sure you're one of them.

Cohn is trying to be a computer salesman in Atlanta, Ga.

Bring in more people. It's never too late to bring in more people. Hire some contractors. Recruit folks from another floor. Get your parents to write Helptext. The more people you bring in, the more people you can blame. So what if they're not productive? They'll fit right in with everybody else.

Delegate. Burning the midnight oil? Delegate project management to your people! Let them be responsible. Let them set deadlines. Let your people grow! Meanwhile, use the spare time to look for a new job.

Ignore quality control. You've got to cut back somewhere. Why test for months, fall behind schedule and then realize the system is bug-infested beyond hope? Just skip testing altogether, stay on schedule and assume the system is bug-infested beyond hope.

Create a more efficient schedule. Every project produces tons of time lines, which are about as useful as those little white mattress tags. However, you can use them to make a splash. Tape them up all over your office. Tell everyone you're experimenting with resource switching theory, matrix man-hour models and any other buzzwords you can think of. Then burst into a meeting and announce, "I've found it! My discovery will increase available man-hours by 40%!" Don't tell them you discovered weekends.

Deborah Withey

Invent "The next release." Is the deadline fast approaching? No way to make it? You can still save the day. Ignore the stuff you haven't finished. Cut out the stuff you haven't started. Then divide the project into two releases! Put 10% in one release, 90% in the other. The first release goes out on time, and you smell like a rose. The second release is somebody else's problem, especially when they find out they got stuck with the 90%.

Do some strategic team building. Every failing project needs a task force or two. A steering committee is also essential, with a few subcommittees tossed in to share the burden. A project management council makes good sense, and you should also enlist a crew for project assurance. So what if all these committees just gum up the works? Everyone within a 30-mile radius will get sucked into the project, and there'll be no one left to complain.

Don't let users change the specs. That's the No. 1 reason why projects fail, so be firm. Wait for the right meeting. Go in there and stand up to the users. Proclaim it's too late to change the specs. Use choice phrases such as "over my dead body!" Of course, you may feel pretty stupid when you get back to your office and find out there were never specs in the first place.

Never estimate man-hours. Projects fail because they're planned in man-hours. After getting coffee, calling your broker and removing the lint from your suit with Scotch tape, a man-hour is really only 19 minutes. However, a happy hour is 57 minutes (you lose three minutes thinking up excuses for when you get home). And a lunch hour is about 100 minutes, give or take dessert. So plan the rest of your project in lunch hours; you'll wind up with extra time.

Try this when all else fails. OK, nothing has worked, and everyone is going to get chewed out. However, before it's too late, try "outsourcing." Farm some pieces of the project off-site, and maybe you can still make it. Sure, you probably should have thought of this long ago. However, if you didn't, and the fat lady is about to sing, outsourcing can always be your last resort. Or Club Med, and keep your phone off the hook.

Anti-assembler prejudice hinders better computing

TIM STONE

Often during my career I have been asked, why would anyone write a program in assembler? The question underscores one of the problems facing today's information systems professional: What is the best way to implement the large complicated systems that are being developed to meet management's information needs? The fact is we have allowed ourselves to develop a taste for a few tools that are available to us and have virtually ignored others that are not to our liking.

If this situation were to occur in the construction industry, buildings would be built from plans that only called for the use of a hammer and concrete. All of the building materials, tools and techniques available would have been ignored because someone asked, "Why would anyone want to build with steel?" How often do we in IS overlook an obvious design choice for arbitrary or historical reasons?

Stone is a senior software analyst at Country Companies in Bloomington, Ill.

Wasted potential

I am not an assembler bigot who preaches that everything be done in assembler. However, I use assembler as an example of a perfectly good tool that has been thrown out of our programming tool kit. Having programmed in assembler for 15 years, the bias against this language is painfully obvious to me.

There are reasons for this bias. Most are based on some (ancient) historical happenings. The scenario that produced these feelings could very well have been the following:

A long time ago, programmers came in two flavors: regular and demigod. The regular type wrote programs in Cobol and made large monolithic messes replete with ALTER-GOTOs. The nice thing was that the regular-type programmers all wrote programs the same way and could usually understand one another's programs. Being in the majority (as regular types always are), they generally wound up in management.

The other type of programmers, the demigods, scorned the large monolithic messes as being completely wasteful. Because of their "superior" knowledge of everything related to computers, they wrote assembler programs that did everything efficiently and used as little storage as possible. The problem was that regular programmers simply could not understand these programs, and, when they became management, vowed never to have one in any of their systems.

So because of something that happened a long time ago, we threw the power drill out of our tool box. We labeled assembler as being inappropriate for *any* situation, when in fact it is the *best* tool for some. This stereotyping of tools is quite pervasive, and I'm sure that anyone you talk to in IS has a closed mind on some tool.

So why should we keep open minds about the tools that we use? A situation that I was involved in comes to mind. An implementation team had received a set of specifications for a program to do some slick things. This program was supposed to be usable from batch and CICS and handle variable length and position data streams, high transaction rates and low maintenance. It was a perfect application for assembler. However, the team had no assembler expertise, and management ruled out the use of assembler.

The system was implemented in Cobol, and performance was very poor. Unfortunately, rather than solve the problem by using a more appropriate tool, the team chose to remove functionality and flexibility from the system, thus limiting its usefulness.

Architect a solution

There is a solution to this problem: a software architect. This individual is the key to creating the best implementation possible using all the tools available. Each organization should have at least one person with software architecture responsibilities.

The software architect must have knowledge of all the tools that are available. Good knowledge of the business and good analytical skills are also prerequisites.

The development support unit is also a very necessary part of the process. This unit should evaluate new tools that come along. When a tool is found that fills a need or improves procedures used in the application development area, development support must introduce the tool in such a way that it is received and used enthusiastically. The software architect should be a part of this process as well, because this individual best understands the needs of the application development people, and the system implementations that are scheduled and/or in progress.

Take a look around and see what tools are available. Stop labeling tools and start exploiting them. Personal computers are not always "toy computers." IBM's IMS is not always "too cumbersome." Knowledge-based systems are not necessarily "too new." Fourth-generation languages are not always "too slow." Distributed processing is not necessarily "too unreliable," and Cobol is not always "the right way." Just as in constructing a building, let's not only plan our systems, let's architect them.

In the future, when I am asked, "Why would anyone write a program in assembler?" my answer will be: "Because it is the right tool for the job."

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SOFT TALK

Jean S. Bozman

Databases saving face

How do we hide the ugly face of relational technology? Relational databases are, after all, nothing more than an extremely long succession of tables, with data arrayed in thousands and thousands of rows. Now that we can access the corporate database from our personal computer, the question remains: How can we navigate it comfortably?

Some vendors are trying to mask that ugliness with PC-based software that lets users point and click their way through rows and rows of user-unfriendly data tables. In recent months, there has been a spate of announcements in this "masking" trend — including Oracle Systems' Oracle for Apple Computer's Macintosh, which navigates both the Oracle and IBM DB2 databases. Another entrant is Gupta Technologies' new SQL Vision, which feeds IBM's DB2 data into PC applications such as Microsoft's Excel spreadsheet.

How is all this masking done? The programmers at Oracle and Gupta are, essentially, writing SQL commands so that information systems program-

Continued on page 33

IBM charts progress of DB2 performance

BY JEAN S. BOZMAN
CW STAFF

It is called the Red Book. For months, it has been quietly appearing at IBM mainframe sites.

The Red Book, which IBM is giving to its customers, says this: IBM's DB2 Version 2.2, shipped last fall, is a decided improvement over Version 2.1 — but only by 7% to 20%.

IBM's internal benchmarks of DB2 2.2 were conducted last fall at IBM facilities. Conducted on one IBM 3090 Model 600S and one IBM 3090 Model 300, the tests were intended to compare DB2 2.1 and DB2 2.2, acting on equal work loads.

"We wanted to show that each release of DB2 is measurably better than the previous releases," said Norris van den Berg, manager of strategy and market planning for all IBM software products manufactured at the Santa Teresa, Calif., facility. "We wanted to show that DB2's performance is commensurately better, according to the amount of machine resources you give it."

The next release of DB2, due later this year, will be accompanied by performance statistics for distributed queries between DB2 and the other three Systems Application Architecture platforms — OS/2 Extended Edition, SQL/DS and OS/400, van den Berg said.

Those who have seen the Red Book applauded the level of detail but are not wowed by the performance figures.

"What's nice about what they've done is that they show you how they got the performance numbers. They tell you what IBM products they were using, and how the tests were conducted. That's a lot better than what you got a few years ago," said Howard Fosdick, vice-president of the International DB2 Users Group.

"These tests are legitimate, but you have to realize that the machines they were testing have nothing else running on them but DB2. A normal mainframe will also have TSO and development applications running alongside DB2," Fosdick said.

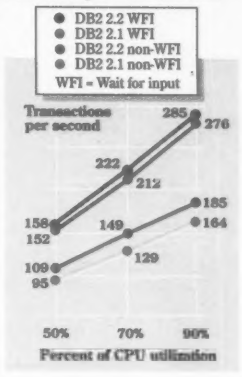
"There's a limited performance enhancement in the new DB2 release," said Dale Kutnick, president of Meta Group, Inc., a Westport, Conn., consulting firm. "The more complex the transaction, the more improvement you'll see. They've added a facility that does an advanced look-up for decision support applications."

However, he added, "A lot of people think there have been significant performance advances in DB2 Version 2, Release 2, but there really aren't, except in some isolated instances."

Continued on page 33

High-water mark

IBM claims to be nearing a peak performance level of 300 transactions per second with DB2



Source: IBM CW Chart: John York

Unisys unveils image offering for office

BY ELLIS BOOKER
CW STAFF

CHICAGO — Last October, Unisys Corp. announced its integrated imaging plans for banks and technical engineers. Now it has added office workers to the picture.

The Infoimage Folder, announced at the Association for Information and Image Management (AIIM) show this month, is an electronic file folder management system that routes documents between users, who can collect several image documents into a single element that can be handled as a "folder." Users can also attach electronic notes, annotations or comments to a document without altering its original contents, Unisys said.

In another AIIM announcement, Hewlett-Packard Co. unveiled an image document management system for its HP New Wave office environment and said it had lined up three value-added resellers to offer industry-specific applications for the new system.

Unisys is using Unix-based image servers from Filenet Corp. in Costa Mesa, Calif., and has licensed Omnidesk, a workstation interface software package, from Sigma Imaging Systems, Inc. in New York. The workstation platforms for Infoimage Folder are MS-DOS personal computers.

From the graphical interface, users select icons for tools (in boxes, file cabinets and calculators) as well as data objects (folders, documents and text files). An Event Manager software module, still under development by Unisys, will control and report on the imaging processing activity of Infoimage Folder.

Release 2.0 of the system, expected to ship at the end of next year, will use Unisys' own Model 50 and Model 70 6000 servers, according to Unisys.

The computer vendor also said that The Northern Trust in Chicago had become the first user to deploy its Infoimage Item Processing System. The system was shipped to the bank late last month, Unisys said.

Infoimage Folder will be available in the fourth quarter at

Continued on page 32

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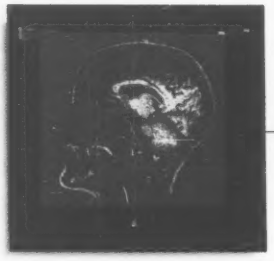

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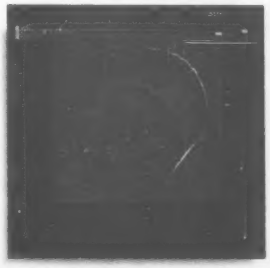

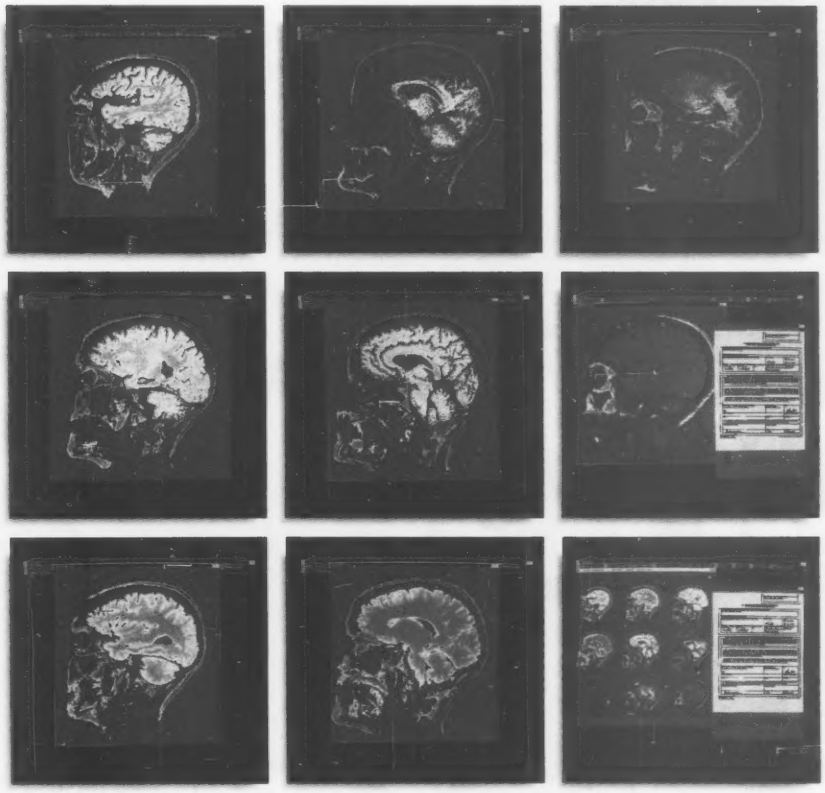

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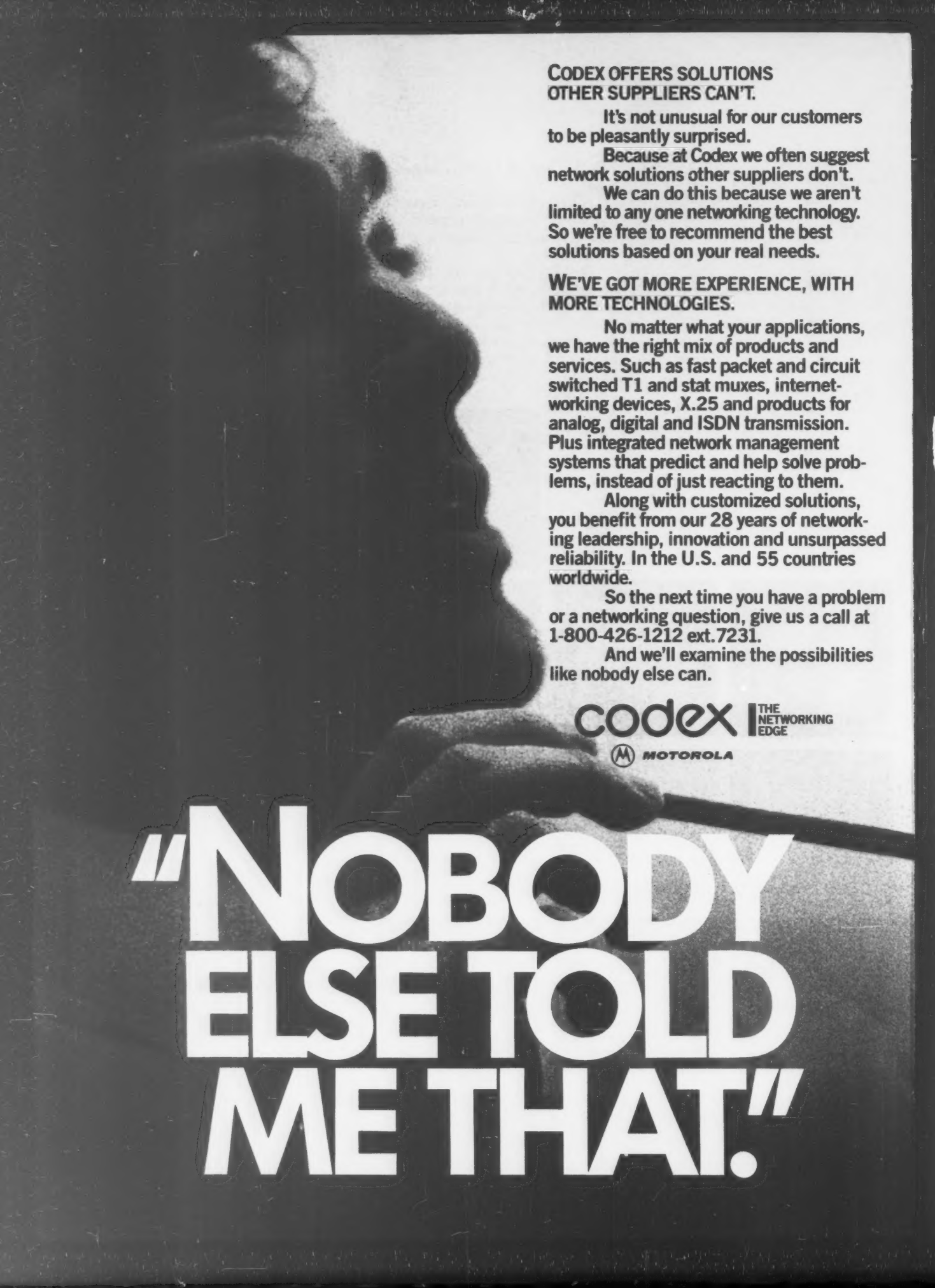
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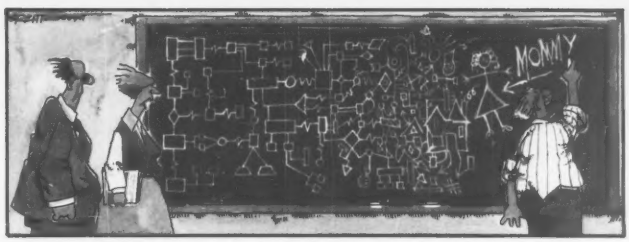

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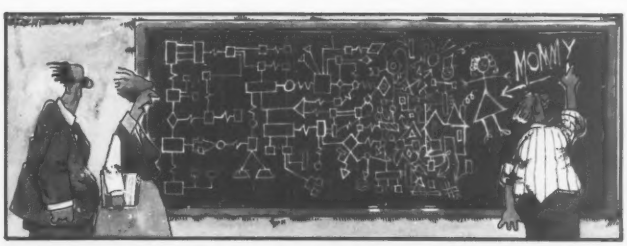

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Prudential gets a better batch

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

NEW YORK — From a sturdy stone building at the foot of the Brooklyn Bridge, Prudential-Bache Securities, Inc. runs a worldwide systems operation that frequently finds itself flirting with technology's leading edge.

As the first Wall Street firm to completely convert its data to an IBM tape compaction option introduced last fall, the retail brokerage company has whittled down its crucial nightly batch processing time by one to two hours.

"You can't imagine what that does in the brokerage world, where all the backups are tapes, watching that window greatly shrink," said Chief Information Officer William H. Anderson. "It's remarkable how such a simple thing as a code change in all our tape units makes a difference in a night's work."

The IBM tape storage feature, called Improved Data Recording Capability (IDRC), allows users to store three to five times more data on magnetic tape cartridges on IBM 3490 drives and, via microcode changes, the 3480.

"The driving force at Prudential-Bache is the desire to provide the best customer service while doing our processing in the shortest possible time and improving productivity," said Anderson, who spent 27 years working for IBM before joining Prudential-Bache.

The focus of Anderson's information systems operation now is a massive project to move the 350 branch offices worldwide to a new hardware platform and operating system. A pilot project with the chosen vendor — IBM, ADP, Digital Equipment Corp. and Unisys Corp. among the contenders — will be under way by June.

Joyce Ravid

Prudential-Bache's *CIO William Anderson (left) and Vice-President Bruce Mellusi*

"We want to move to 1995 technology to take advantage of the finest price/performance available," Anderson explained.

The branch offices handle some 2.5 million customer accounts, relying on the main data center in downtown Manhattan for 85% to 90% of the processing load.

The data center is anchored by a pair of IBM 3090 Model 600s, an IBM 3084Q and a DEC Vaxcluster. There are some 2,000 IBM-compatible personal computers scattered throughout IS headquarters and another 8,000 to 9,000 PCs from Unisys Network Computing Group (formerly Convergent Technologies) in the branch offices.

The Vaxcluster system, which includes DEC's latest model in the 6000 midrange line, is used exclusively by the capital markets group in quantitative analysis for the trading desks. Anderson recently sped up the number-crunching abilities of the VAX processors with an Intel Corp. "Hypercube" supercomputer, which is based on 32 Intel 80386 processors. In a few weeks, eight of the 386s will be replaced with Intel's I860 microprocessors, boosting performance by at least a factor of 10, he added.

Last year, the brokerage firm rolled out its own Boss II distributed system, which runs in each branch office on Unisys Megaframe minicomputers. Every day, the 6,500 financial advisers tap into the mainframe roughly 150 times each for a daily transaction load of at least 1.7 million, Anderson said.

Updated client financial positions, balances and account activities from the previous day's dealings are transmitted daily by 4 a.m. from the mainframes to each field office.

"Four years ago, we were still manually scheduling jobs on the mainframe. Now everything, including recovery of failure time, is under automated systems," he said.

The only manned area left is the tape pool, which consists of 64 IBM 3480 cartridge drives and a library of 50,000 cartridges. Opting for the IBM tape storage change enabled the data center to expand the 200M bytes of maximum storage per tape up to 800M bytes each.

Prudential-Bache regularly serves as a beta-test site for the latest in computer technology. Later this month, for example, the firm will become a beta-test site for Siemens Information Systems, Inc.'s new NDX-class laser printer.

"It should enable us to produce substantially more, with sharper definition and a superior quality of print," said Bruce Mellusi, first vice-president in charge of data center operations. For a department that churns out some 225 million pieces of paper per year, the notion of faster, lower cost printing is dazzling indeed, Mellusi pointed out.

Also in the works is a test run pitting IBM's new 3390 disk drives against the current high-end drives from Hitachi Data Systems Corp. The winner will join a disk farm operation that stores half a trillion bytes of data.

Yet Anderson is quick to tell visitors to his cramped, 20-year-old data center how "genuine business requirements" — not whiz-bang technology — push Prudential-Bache onto the leading edge.

"We're very advanced because it's the least cost solution," said the six-year veteran CIO, whose tenure lets him lay claim to being one of the longest surviving top computer executives among the major New York brokerage houses.

Into a safer safe

Prudential-Bache Securities in New York is among the first firms to back up all of its data — more than 500,000 transactions per day — through electronic vaulting with Comdisco Computing Service Corp. in Carlstadt, N.J.

"This summer we will be transmitting all trades on a real-time basis to Carlstadt," said William H. Anderson, chief information officer at the retail brokerage firm. "We are recovering all the major systems of the company rather than a critical subset of maybe 50%."

The unique aspect of the firm's vaulting project is its use of Storage Technology Corp.'s Automated Tape Library System over a T3 communications line to achieve a channel speed of 3M bytes.

Prudential-Bache "is controlling the system from their end. We manage the facility and provide the technology platform, but we don't even have to interact with them," said Adrien Robichaud, assistant vice-president for product development at Comdisco.

Should disaster strike the data center, company employees could move to a Comdisco hot site and tap directly into their the vaulting system, recovering all but the last 15 minutes of trading.

MARYFRAN JOHNSON

Cost, lack of understanding remain as hurdles to SAA

BY ROSEMARY HAMILTON
CW STAFF

IBM's Systems Application Architecture has lost some of its luster, and the company needs to work harder to both clarify what SAA is and address the major hurdles to it before it becomes more widely accepted, observers said recently.

"IBM needs to make moves in SAA to make it more popular," said Chuck Balsley, publisher of the "SAA Age" newsletter at Systems Educational Associates, Inc. "The perception is it's this huge structure with no reality."

SAA is IBM's grand plan to unite its major and disparate operating environments. It is actually an architecture with a set of guidelines to achieve this goal. Existing IBM products are said to live up to the SAA rules. Many users are struggling to understand it and, as a result, have elected to move slowly to it. However, even when users give SAA the green light, there are two hurdles that IBM should move aside to help users move to this new world, observers said.

"They've been talking about SAA for a long time, and it doesn't seem to be coming," said George Sekely, vice-president of computers and communications at Canadian Pacific.

First, IBM has designated the Personal System/2 running the OS/2 Extended Edition operating system as SAA's front end. That choice is expensive because so many customer sites continue to run the earlier generation personal computers with the DOS operating system and would be forced to upgrade.

DOS is not an SAA-sanctioned operating system, and observers suggested that IBM must bend on this issue to bring more users into the SAA fold.

SAA nod?

At the SAAworld Conference and Exposition, held in Boston earlier this month, Earl Wheeler, IBM's SAA guru who holds the official title of vice-president and general manager of programming systems, indicated that IBM would address the DOS issue but stopped short of saying IBM would give it an SAA nod.

"PC-DOS applications can implement the consistent look and feel of [Common User Access] with Microsoft Windows, making the move to OS/2 easy and natural," Wheeler said.

Observers attempting to interpret Wheeler's statement suggested that IBM will give in, while others predicted that DOS will wind up as an SAA stepchild like the VSE mainframe operating system, which functions as an SAA "participant."

Beyond the costly front end, users must also face the challenge of rethinking the way they have thought about applications.

Since SAA was introduced in 1987, it has evolved from an applications portability strategy to one that focuses on cooperative processing. That is a major undertaking for users, whether it concerns learning how to write new applications or fitting their existing ones to SAA.

Eventually, users will be able to run cooperative processing environments, but they must build them over the next several years. One of the key components, IBM's AD/Cycle, is rolling out in pieces over time.

Nonetheless, in the SAAworld keynote speech, Wheeler said, "The SAA vision we introduced in 1987 has become the reality of 1990."

Observers said Wheeler is correct up to a point — and that is what IBM should be telling users. "There is a difference between something that is 'not doable' and something that's hard to do," said Michael Pinckney, president of David Group East, Inc., a consulting firm in Trumbull, Conn.

Observers pointed out that many pieces of SAA do exist, such as the designated operating systems, communications facilities and programming interfaces. However, the problem is that they have not all been fine-tuned enough to achieve the true SAA objective — an enterprisewide applications environment that end users can make use of transparently.

Client/Server Architecture

The Sybase View

Client/server architecture is an approach for managing database applications with efficiency, flexibility and control. Specifically, client/server software divides monolithic applications into discrete, reusable and sharable components.

Clients and servers are independent of each other and yet are fully interoperable. The client component handles the user interface and local data manipulation, while the server component provides data management services for multiple clients. The client and server components can run on the same computer or on different computers that communicate transparently over a network.

When client/server architecture is fully implemented, it allows companies to save money and gain a competitive edge in several ways.

- It simplifies and speeds application development
- It provides a control mechanism for managing data
- It supports third party applications and tools
- It integrates external sources of data
- It leverages the cost savings of hardware downsizing

It's important to note that only a full implementation of client/server can deliver all these benefits. While other database products may operate over a network, only SYBASE fully supports client/server with the following capabilities.

PROGRAMMABLE SERVERS. Other database products require each client application to correctly implement an organization's approved business transactions and enforce its business rules. With SYBASE these functions can be programmed centrally — in the server — and shared by all client applications. This approach eliminates redundant coding, facilitates maintenance, and provides a central point of control to protect corporate data.

COOPERATIVE SERVERS. By supporting direct server-to-server communication, SYBASE servers can work in concert without the intermediation of a client application. For example, one server can ask another server to check a potential customer's credit rating before accepting an order. This capability allows organizations to effectively manage data consistency among systems without having to police all application programs, as other database systems require.

OPEN SERVERS. The SYBASE OPEN Server allows both clients and servers to communicate with other relational DBMSs, non-relational DBMSs, file systems, existing application programs, real time data feeds, and other application services. Because SYBASE provides an open interface, companies can implement the exact functionality and/or performance they require. This SYBASE approach contrasts with other proprietary and inflexible "one size fits all" connectivity strategies.

Client/server is far more than a feature. It is an architecture. And only a complete implementation of that architecture can deliver the productivity, control, integration, and cost savings that today's on-line business environment demands.

SYBASE is the only database system to offer such a complete implementation of client/server architecture — with all its attendant benefits — today. That's why SYBASE is the undisputed leader in client/server database management for on-line applications.

THE SYBASE FORUM

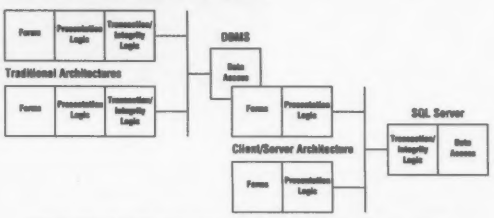
This view of Client/Server Architecture first appeared in The SYBASE Forum (Computerworld, February 19, 1990).

Now T Client/Se A Little

The programmable server is the heart of the SYBASE RDBMS.

Designed to protect the integrity and security of your data, the SYBASE Client/Server Architecture also reduces application development and maintenance costs by letting you write organization-wide rules once, directly into the server, and share them among all client applications. Once written in, sophisticated stored procedures and triggers enforce data integrity, security and business rules.

Other RDBMSs force you to spend huge amounts of time writing rules into each application on your network. The danger is that if you miss just one application, you can corrupt an entire database and possibly crash the server and the entire network.



Unlike traditional architectures, a true client/server architecture lets you program transaction/integrity logic once in the server and share it among client applications.

The key to data integrity in a *true* distributed environment is the SYBASE two-phase commit protocol and remote procedure calls.

While distributed retrievals pose little threat to the consistency of the database, distributed updates require a system that *guarantees* consistency of data across two or more servers. Only two-phase commit guarantees that consistency.

With SYBASE, information can not only be retrieved, but safely updated across servers. In a recent product comparison, InfoWorld warned: "Currently, you cannot update information across two servers running Oracle. (Microsoft/SYBASE) SQL Server allows such updates, and still maintains data integrity across networks using a method called 'two-phase commit.'" InfoWorld, March 5, 1990, "Dueling Servers."

"SQL Server is a very different animal... It's fast, does a good job of protecting data integrity. Most important, it implements the kind of leading technology that allows it to adapt to varying requirements without draining financial and human resources in the process."

hen, Let's Make rver Architecture More Concrete.

The Federal government recently mandated that every bank in America report cash transactions of $10,000 and more. A seemingly simple rule change meant thousands of hours of reprogramming, testing and supervision to ensure the new procedure was implemented throughout the applications and in a complex array of databases. A bank running SYBASE, with its programmable server, could quickly write the change into the server and be assured the new rule would be implemented across all applications and enforced throughout the organization.

SYBASE SQL Server—with its open architecture, scalable high performance, and server enforced integrity—can help make downsizing a reality.

Rather than opting for a mainframe-based system, a major shipping company chose SYBASE and a workstation architecture instead. "The goal was to find a fast database engine that could distribute the data…and SYBASE was the clear winner." Also, "The ability to distribute data among various locations, combined with flawless data integrity when distributing that data, was key to choosing SYBASE."

THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT

COMPUTERWORLD

"Sybase users gave it the highest satisfaction rating in Computerworld's 'Buyer's Scorecard' survey of relational database products." March 5, 1990

BUYERS' SCORECARD

"Scorecard respondents named advanced features, such as stored procedures and triggers, as the most useful functions of Sybase…" Computerworld, March 5, 1990, "Buyer's Scorecard."

Stored procedures. SYBASE stores groups of compiled and syntax-checked SQL statements on the server itself, ready to be addressed directly from applications. Because they're precompiled, stored procedures execute very quickly, dramatically increasing system performance. **Triggers** are a type of stored procedure invoked *automatically* when attempts are made to modify specific pieces of data. Triggers can be nested or can cascade changes throughout related tables.

"Oracle does not have a feature comparable to stored procedures or browse mode."

InfoWorld, March 5, 1990

In the real world of multi-vendor environments, SYBASE preserves your prior investment while keeping your future options open.

SYBASE SQL Server supports portability to a wide range of strategic computing platforms, including VAX/VMS, UNIX, and OS/2, making it a natural for linking applications residing on different types of machines.

SYBASE SQL Server's documented and published application programming interface lets developers build transparent front-end or server applications that communicate with relational and non-relational DBMSs (including IBM IMS and DB2 and DEC RMS environments), file systems, existing application programs, real-time data feeds, and application services such as stock quotes and electronic data interchange.

SYBASE

Now that we've made Client/Server Architecture more concrete, we'd like to show you what you can build with it. Please join us for a free seminar. We'll explore a host of RDBMS issues and present a demonstration of many key product features.

For seminar reservations, or more informaton about SYBASE, use the coupon or call **1-800-8-SYBASE.**

SYBASE SEMINAR SCHEDULE/APRIL-JUNE, 1990

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Birmingham	May 22	Washington	May 15	Baltimore	April 24	Cincinnati	May 30
Huntsville	June 6	**Florida**		**Massachusetts**		**Oregon**	
Alaska		Fort Lauderdale	May 2	Boston	May 17	Portland	May 29
Anchorage	May 10	Jacksonville	June 7	**Michigan**		**Pennsylvania**	
Arizona		Tampa	May 24	Detroit	May 23	Harrisburg	May 17
Phoenix	May 15	**Georgia**		**Missouri**		**Tennessee**	
California		Atlanta	May 9	St. Louis	April 25	Nashville	May 2
Los Angeles	April 24	**Hawaii**		**New Jersey**		**Texas**	
San Diego	May 31	Honolulu	May 30	Saddle Brook	May 24	Houston	May 15
San Francisco	May 9	**Illinois**		**New York**		**Washington**	
Santa Clara	June 5	Chicago	May 17	New York City	May 1/ June 5	Seattle	June 7
Westlake Village	May 16	**Indiana**		Rochester	April 25	**Canada**	
Colorado		Indianapolis	June 6	Syracuse	June 5	Calgary	May 8
Denver	June 5	**Iowa**		Tarrytown	May 10	Montreal	April 25
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Sponsors rally behind OSF standard

BY AMY CORTESE
CW STAFF

For the Open Software Foundation (OSF), good may come from a failure.

The termination of talks earlier this month between the OSF and its rival, AT&T's Unix International, prompted the strongest commitment by sponsors of the OSF since its creation nearly two years ago, giving the organization what many considered to be a new lease on life.

The OSF's three major sponsors — IBM, Digital Equipment Corp. and Hewlett-Packard Co. — promised next-year delivery of products based on OSF/1, the group's planned implementation of Unix, and pledged additional long-term funding. "We were waiting on the sidelines, pending results of the unity discussions," said Joe Menard, DEC's Ultrix marketing manager.

Two other sponsors, Siemens AG and Nixdorf Computer AG, which are currently engaged in a merger, extended financial support but stopped short of commitments to ship OSF/1.

Despite the uncertain intentions of some member companies, analysts said firm commitments from the "Big Three" OSF sponsors were critical.

"We have said all along it was our intent to move over to the OSF base," said Peter Schneider, IBM's vice-president and assistant general manager for development at IBM U.S. However, "a confluence of forces led to the commitment."

In addition to OSF/1 and the OSF/Motif graphical user interface, which many members are already shipping, OSF sponsors said they will implement other technologies from the OSF in their Unix and proprietary lines, including a distributed computing environment, which the OSF plans to announce on May 14.

Analysts said the show of strength marks a turning point for the OSF. "The whole thing was very experimental, but now, two years later, we've reached the position where member companies are working to put product lines where their mouth is," said Nina Lytton, publisher of the "Open Systems Advisor" newsletter.

However, some were skeptical. "OSF/1 is crippled when compared to [HP's] HP/UX and [DEC's] Ultrix 4.0. I don't believe that with the power of the operating systems they already have, these big companies are going to ship OSF/1 — an untried and unproven operating system," said Rikki Kirzner, an industry analyst at San Jose, Calif.-based Dataquest, Inc.

Nonetheless, most agreed that the OSF has been granted a new lease on life. "There was a lot of ambiguity about how long the OSF would be around, so this is a positive thing," said Larry Sikon, director of advanced technology at DHL Systems, Inc.

Although HP had announced last fall that it would ship a product based on OSF/1 in 1991, other members, notably IBM and DEC, were hesitant. Executives from both companies had cast doubt on their intentions at a conference last month by saying they would ship if and when OSF/1 became a viable product.

A change in plans last fall set back progress on OSF/1, but the decision to go with the Carnegie Mellon University Mach microkernel seems to be paying off. OSF members said that early "snapshots" — prereleased pieces of OSF/1 code — have convinced them that the operating system is indeed viable.

"The uncertainty level has diminished," said Jim Bell, director of strategic relationships for HP. "HP has looked into things enough to feel comfortable announcing product."

"A lot has happened in the last six months in regard to technology the OSF is able to produce," OSF President David Tory acknowledged.

In addition to a more efficient Unix kernel architecture and advanced features such as multiprocessing, the OSF claimed OSF/1 will be compatible with the three major variants of Unix combined in AT&T's latest release of System V — those versions from the University of California at Berkeley, AT&T and the Santa Cruz Operation.

General availability of OSF/1 is scheduled for November.

Migration in the works

Sponsors of the Open Software Foundation stated plans to migrate their existing systems to an OSF base, but in a staged manner.

"It is IBM's intention that all three platforms, [the Personal System/2, RISC System/6000 and System 370], be moved to OSF base, but the only definite date at this time is for the PS/2," said Peter Schneider, vice-president and assistant general manager for development at IBM. "We were planning to convert it to AIX Version 3, but we will go right to OSF/1," he said.

Specific details will be forthcoming from IBM in the fall, but Schneider said the S/370 would be the next likely target for OSF/1; work on that is already under way. The RS/6000, IBM's powerful reduced instruction set computing (RISC) platform, will follow at an unspecified time in the future.

"The RS/6000 people for the next several months have a higher calling," getting the new machines running a brand-new release of AIX out the door, he said.

Hewlett-Packard Co. will move its HP/UX and Apollo Division Unix-based systems to the OSF/1 base, in addition to offering a pure OSF/1 system for new customers, according to Jim Bell, HP's director of strategic relationships. Additionally, the firm plans to incorporate OSF's distributed computing technology in its proprietary MPE line.

Digital Equipment Corp., which just unveiled a new version of Ultrix, said it will base the next major release on OSF/1. Joe Menard, DEC's Ultrix marketing manager, said the firm has already demonstrated source and binary compatibility between Ultrix and OSF/1 in OSF's Cambridge portability laboratories.

AMY CORTESE

DAT market continues growth amid changes

BY J. A. SAVAGE
CW STAFF

By the end of this year, 4mm digital audio tape (DAT) drives will be priced low enough to "open up the market," according to Michael Peterson, president of Peripheral Strategies, Inc.

The Santa Barbara, Calif., market research firm said in a report issued earlier this month that last year's market for both 4mm and the older 8mm tape drives grew 254% in units shipped and 134% in revenue.

DAT is used for slow-access, high-density (one tape for 1G to 2G bytes of data), backup storage and archiving, usually on multiuser systems. Peterson said that for every 20 CPUs currently in use (in the $6,000 to $12,000 price range), there is one DAT drive.

The 8mm drives have been on the market for about two years, and the 4mm have only recently arrived. "Eight millimeter is here to stay, but 4mm will be lower in cost in the long run," Peterson said. He predicted 4mm drives will cost below $700 by the end of 1991 in OEM quantities. Eight millimeter, in 2.3G-byte size, will run about $1,300 for OEMs at the same time.

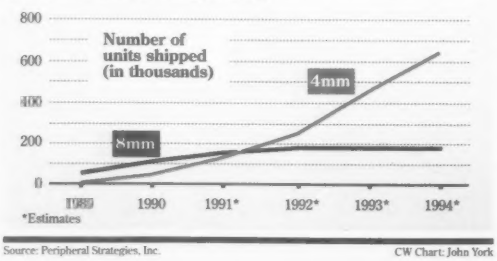
Not only are there two sizes of tape drive, they come in two standards — DDS and Data/DAT. The DDS standard, supported primarily by Hewlett-Packard Co. and Sony Corp., is the market leader, Peterson said. That standard has a random-read, but not random-write, feature.

The other standard, Data/DAT, has more than a dozen companies' support, such as Hitachi Ltd. and Toshiba Corp. "It's a good six months behind DDS," Peterson said, but the added feature of random-write will keep it in the market.

Both standards have been accepted by the American National Standards Institute and will be considered in June by the International Standards Organization, according to Peterson.

DAT's the way it goes

The 8mm format is the driving force behind growth of the digital audio tape (DAT), but 4mm tape is ready for takeoff



Source: Peripheral Strategies, Inc. CW Chart: John York

Image

FROM PAGE 25

a starting price of $400,000.

The HP Advanced Image Management System (AIMS) is targeted at banking, health care, insurance, government and pharmaceuticals, HP said.

HP AIMS, which can function within HP's New Wave Office environment, is based on the Extended Data Processing technology from Plexus Software, Inc. Later this year, HP said, the system will gain an optical character recognition option, the ability to scan in text and convert it to ASCII code and full-text retrieval capability.

HP said it had signed agreements with three VARs: Andersen Consulting in Chicago, BTG, Inc. in Vienna, Va., and Grumman Corp., a subsidiary of Infoconversion located in Woodbury, N.Y.

Pricing for the entry-level HP AIMS, which is implemented on HP Vectra 80386-class servers and workstations, is $40,000; a typical 20-user system will cost approximately $400,000.

Like many of the attendees at the show, Allen W. Harris, national director of image systems services at Ernst & Young in New York, said imaging technology had finally reached beyond its "gee whiz" stage of technical demonstrations. Business applications, he said, are now the key.

"Document image processing will become about as exciting as word processing by 1995," said Allen, who is part of Ernst & Young's 14-month-old Image Systems Services Group.

Even so, Allen noted that technical issues remain to be resolved in image processing, not the least of which are the incompatible formats used for computer-aided design and manufacturing, electronic publishing and image data processing.

Allen cautioned that imaging, like so many advanced information technologies, brings with it "huge operational issues." Customers, he said, have deployed this technology expecting a quick payback but have been stymied by the subsequent need to revamp their organizations.

The other AIIM news is as follows:

- Users of Wang Laboratories, Inc.'s Integrated Image Systems will now be able to use SQLforms, a fourth-generation language development tool from relational database vendor Oracle Systems Corp., the two firms said.
- Wang demonstrated image transport over an Integrated Services Digital Network (ISDN) communications path. ISDN was used to link a remote Wang VS image server in the experimental application, which featured a distributed architecture whereby images from the remote server were keyed via software to a local database application.

DB2

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The IBM proprietary tests covered transaction processing, query and batch applications. Users can order the 175-page IBM report, titled "DB2 Version 2 Release 2 Performance Report," by requesting IBM publication GG24-3461-00. Highlights include the following points:

- Transaction times in an IMS/DB2 dual-database environment improved 12.8% over the previous release of DB2 when the CPU was 90% utilized; however, when the CPU was just 70% utilized, performance was up 15.5% compared with DB2 2.1. Peak transaction rates for DB2 2.2, with 90% CPU utilization, were 285 per second, the report said, compared with 276 per second for the previous DB2 release.
- When the application required "wait-for-input" before the IMS/DB2 transaction was completed (and thus used less overhead), improvement from the new DB2 release was just 3.3% when the CPU was at 90% utilization; at 70% utilization, the improvement was 4.7%.
- The elapsed times for DB2 queries, such as those used in decision support applications, were reduced by a factor of 10 in DB2 2.2, compared with the previous release. IBM attributed the improvement to new ways of processing DB2 indexes, reducing path lengths and using run-time statistics to tune the built-in DB2 Optimizer.
- Batch processing applications required 20% less CPU utilization. Elapsed time (between the moment a user query was entered and when the response was delivered) was reduced by 5% to 12% in many cases but actually increased by 20% in one case.

The improved use of indexing is the best performance improvement in the latest DB2 release, according to Tom Sawyer, a consultant at Codd & Date, Inc. in San Jose, Calif., who conducts benchmarks of transaction processing systems: "The ability to use multiple indexes gives you that 20% [performance] boost, but the amount of improvement depends on the nature of the query." Queries against a large number of rows in most of the requested data tables may not, for example, need to be presorted and could be run directly against the database, Sawyer said.

Meanwhile, smaller gains in transaction processing will probably not change many user plans. "Everyone will be happy to take an improvement of 5%, 10% or 15%," Sawyer said, "but that kind of gain probably won't cause users to speed up their implementation of the new release."

Sawyer said he expects the next release of DB2 to support new query techniques, along with some measure of parallel processing. It will also support alternate pathways in multiple-CPU mainframes, so that system memory will be less strained by surges in user queries.

Bozman

FROM PAGE 25

mers at user sites won't have to. There are two advantages to this approach: The first is a decreased work load for corporate IS. The second is that the debugged SQL statements should reduce errors in generating user reports based on SQL queries. Automation, in this case, is seen as a way of reducing SQL programming errors.

Does this stuff work? Early users say it does. At Pacific Power and Light, users have been toying with Oracle for Macintosh since it was in beta testing in late 1989.

Prototype executive information systems, shipped early this year, allowed Pacific Power end users to "join" data from Oracle and DB2 databases through a series of menus and subject titles.

The Portland, Ore., utility's IS department *did* have to set up something — the passwords necessary to log onto DB2. But end users are painlessly guided through the database and are treated to an on-screen map of the U.S., which leads them to data about key plant locations.

The decision support system is not widely deployed, however, and remains somewhat unproven in combat.

Gupta is spending this month "on tour" in seven major cities, showing hundreds of potential users how to connect to DB2 by using its PC and local-area network software. The Menlo Park, Calif., company claims that it is beating IBM at its own game — using IBM's Systems Application Architecture guidelines down to the Advanced Program-to-Program Communications networking protocol and the Common User Interface definitions for presentation of data on user screens.

DB2 data gets painted onto simple white screens in response to user queries; the data can then be presented graphically in terms of bar charts, pie charts and the like.

Users can expect many more "masking" products to come out this year and next, offering similar user-friendliness. However, the industrial strength of such software, as IBM often puts it, has yet to be proven — and IS managers have to decide how to guide end users in setting up such micro-to-mainframe links.

Being the host database systems for many major corporations, DB2 (on IBM mainframes) and Oracle (on DEC VAX systems) shouldn't be opened up to casual data travelers. Security for access must be just as tight as it is when a more formal report is generated, using IS programmers to do the querying job.

Potential data trespassing — even data tampering — could be controlled or limited by using data extracts or browsing-only capabilities.

IS must not, therefore, be lulled by the convenience of user-friendly PC-to-mainframe queries, because that convenience can easily be offset by the potential harm that could be done to the corporation's most precious data resource — the knowledge about its own business.

Bozman is *Computerworld's* West Coast bureau chief.

NEW PRODUCTS — SOFTWARE

Development tools

Mentor Graphics Corp. has announced a tool that allows engineers to predict the impact of design decisions on later aspects of a product's design, manufacturability and performance.

Concurrent Design Environment combines all design tools and data into one design process. It includes Mentor's Falcon Framework, which incorporates Design Management Environment and Design Data Management System features.

The product is scheduled to be available with software release 8.0 in the third quarter of 1990. The software will be offered as a free upgrade to customers on maintenance agreements, the vendor said.

Mentor Graphics
8500 S. W. Creekside Place
Beaverton, Ore. 97005
503-626-7000

Languages

Los Altos Software has announced Dbfree, a free-form natural language inquiry and update facility for its Image databases.

The product is available in classic and spectrum native-mode Hewlett-Packard Co. 3000 configurations. Features include relational entry location, modification of critical items, segmentation, menu recall of stored procedures and a personal computer file interface. Synonyms for all system and database elements make the product suitable for multilingual and non-English operating environments, the vendor said.

Dbfree lists for $2,500.

Los Altos Software
Suite E
425 First St.
Los Altos, Calif. 94022
415-941-6030

Applications packages

J.D. Edwards and Co. has announced a human resources system designed for users of IBM midrange computers.

The JDE Human Resource Management system includes modules for wage and salary administration, position control, applicant tracking and benefits administration. The system enables users to set up security on a range of levels, including access to screens and data as well as execution of functions and reports, the vendor said.

The product is scheduled for shipping in the second quarter. Pricing ranges to $70,000, depending on CPU size.

J.D. Edwards
4949 S. Syracuse St.
Denver, Colo. 80237
303-773-3732

Interact, Inc. has introduced a software application for IBM Application System/400 series computers for sales and marketing management.

The Customer Information System is an interactive business solution for an industry's sales force to market products or services, the vendor said.

The product is written in native AS/400 RPG and includes management features such as representative profiles, sales performance and profit margins, according to the company.

License fees for the software package range from $4,200 to $7,700, depending on CPU size.

Interact
580 White Plains Road
Tarrytown, N.Y. 10591
914-332-6100

Utilities

A new release of DTA/Recov that supports the archive of DL/I records of the CICS system journal has been announced by DTA Software Products Group.

Release 2.5 of DTA/Recov, DTA's CICS VSAM file recovery system, was designed to recover lost or corrupted VSAM data sets.

It supports tracking and recovery of DL/I data sets and includes Recovery System software that supports batch journaling and automatic journal archiving, the vendor said.

Release 2.5 is available for the VSE and MVS versions of DTA/Recov. The VSE version costs $4,800; the MVS version sells for $6,000.

DTA
550 Waterford Park
505 N. Highway 169
Minneapolis, Minn. 55441
612-591-6100

NEW PRODUCTS — HARDWARE

I/O devices

A 180 page/min., nonimpact ion-deposition printer subsystem for use with mainframe and minicomputers has been announced by De Rex, Inc.

The S180-2D printer employs dual high-speed print engines and can output as many as two million pages per month.

It attaches to the host computer via either the IBM Channel Interface or a proprietary controller and is priced at $136,725.

De Rex
3650 Coral Ridge Dr.
Coral Springs, Fla. 33065
800-245-7282

Peritek Corp. has announced VCT-Q, a 32-bit CPU-based 24-bit color graphics display controller for Q-bus Digital Equipment Corp. computers.

The single, quad-height board is compatible with the full line of Q-bus-based DEC computers. Features include four RS-232 serial I/O ports, an 8-bit small computer systems interface port, horizontal zoom factors from one to 16 and binary vertical zoom factors from two to 16. The product also offers flexible timing parameters that support nearly all screen resolutions, and it can be programmed for interlaced or noninterlaced operations, the vendor said.

It is priced at $8,200.

Peritek
5550 Redwood Road
Oakland, Calif. 94619
415-531-6500

Power supplies

Universal Power Supplies, Inc. has introduced a line of rack-mount, on-line uninterruptible power supplies for computer and communications equipment.

The devices are available in 750-VA, 1.5K-VA and 3K-VA power ratings with a 10-min. battery reserve time and optional alarm interfaces. The products can be used to correct computer grounding problems and to protect against voltage sags, surges, spikes, brownouts and power outages, the vendor said.

The prices of the UPS devices range from $2,500 to $3,200, depending on VA power rating and backup time provided.

UPS
302 W. Maple Ave.
Vienna, Va. 22180
703-242-0740

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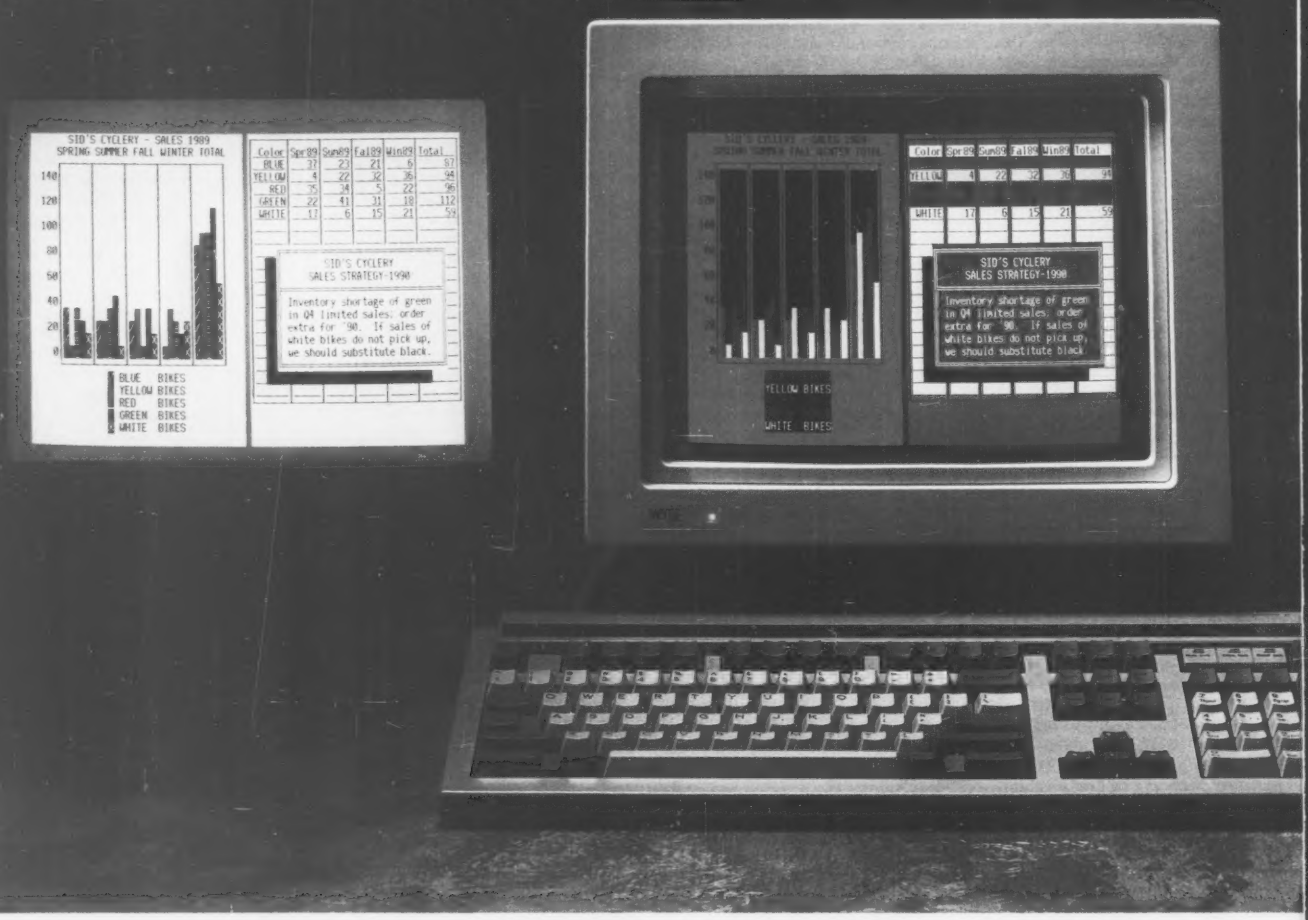

Introducing the Wyse WY-370 General-Purpose Color Terminal.

Few terminals—even monochrome—do as much. The WY-370 supports multiple display formats, high resolution characters, dual host/dual sessions, and operator defined horizontal and vertical windows. But no matter how complex you make the display, the WY-370 makes it simple to read.

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WYSE

MICRO BITS

Douglas Barney

Big Boys get mad and even

Although Lotus and Microsoft have never exactly been kissing cousins, there was always a sort of detente between them.

Lotus had spreadsheets, Microsoft had operating systems, and they were both embarrassed by smaller companies in most other markets.

Then, in Lotus' mind, Microsoft got uppity by introducing the Excel spreadsheet for the personal computer. Part of Microsoft's marketing strategy was to badmouth Lotus' 1-2-3. Lotus got mad and plotted to get even.

Since that time, nearly everything Lotus has done has been designed to cripple Microsoft's spreadsheet efforts. And now, with the shipment of 1-2-3/G and a planned merger with Novell, it's full-scale, all-out, cruel, nasty war.

If anything, Excel has given Lotus focus and an easily definable target that generated a strategy for Lotus. That strategy may be confusing at times, but it is real.

Like any war, both sides have staked out their territory. Microsoft isn't all that greedy.

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SECTION FEATURE: PC OPERATING ENVIRONMENTS

Affordable desktop alternatives

BY CHRISTOPHER LINDQUIST
CW STAFF

In the recent effort to crown *the* desktop operating system of the corporate world by producers of OS/2, Unix and networking software products, some users' needs have been overlooked.

These users want to connect the five people in their work group, not 500 people companywide. They need to download a file, sort a database or print a report without having to sit and twiddle their thumbs for 20 minutes while doing it. Most importantly, they are the users that don't want to spend a fortune on an operating system or network.

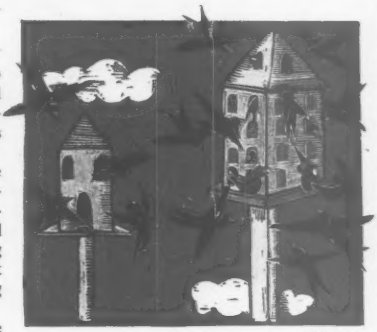
To help fulfill their needs, these users have opted for a group of alternative multitasking and multiuser operating environments over big-name systems such as DOS and OS/2.

David Marshak, a consultant at Patricia Seybold's Office Computing Group in Boston, says that these products may appeal to "a small company that does not have the resources to change or a very large company that may have to change a lot of computers." These alternative environments may also appeal to a company that is undecided about its next platform. "Some of these DOS make-do products become very appealing," he says.

Users have a variety of DOS-compatible, multitasking and/or multiuser operating systems and environments from which to choose.

Multitasking systems allow users to load and run more than one program at the same time. For example, a communications program can download mail while a user works on a spreadsheet.

Multiuser environments, on the other hand, allow more than one user to access a system simultaneously from either another personal computer or a dumb terminal. By using network-compatible software, users can share PC files, have common access to databases and communicate much like they would on a local-area network without the expense of network cards, coaxial cable, bridges, routers and the other requirements of a full-scale LAN.



Nelle Davis

For example, a user could purchase all of the necessary components for a five-user Theos +DOS implementation for about $11,580 from Theos Software Corp. in Walnut Creek, Calif. In contrast, a Novell, Inc. Netware network for an equal number of users costs about $21,900. The major savings comes from the use of low-cost dumb terminals instead of PCs as well as the lack of need for expensive Ethernet adapters and low initial software costs.

For J.C. Penney Co., a multiuser/multitasking operating system fit the bill in its catalog quality control division. Paul Szypulski, senior applications programmer, says his company has been using Theos386 from Theos Software for five years. At his site, the system is used to support 22 terminals. Although no cost savings figures have been calculated yet, Szypulski says he measures the savings in the use of

Continued on page 45

Shuttered floppy disk introduced

BY PATRICIA KEEFE
CW STAFF

STANHOPE, N.J. — Magnaflex Corp. has introduced what it said is the first 5¼-in. disk featuring a built-in, adjustable write-protect shutter such as the one found on its 3½-in. cousin.

Creator and patent holder Anthony DiGiesiti hopes to set a standard with the new disk. The shutter replaces the sticky tabs currently used on standard floppies to ensure write protection. "Glue tabs — a bad idea whose time has passed," DiGiesiti said.

Although he stressed "instant protection at low cost," his shutter will likely be viewed as little more than a convenience. "They're not reinventing the wheel; they are just adding a spoke," said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass.

"Big deal," said Mike Weiss, vice-president of merchandising at Connecting Point of America, Inc., when told about the product. "Who uses 5¼-in. disks anymore? It's mostly the low end."

The new shutter works like those found on 3½-in. disks. A concealed built-in shutter located on the back flap of the disk above the write-protect notch reportedly protects stored data.

The Datalock Disk contains "EZ-SET Write Protection" and is currently being test-marketed. It is guaranteed to operate on any 5¼-in. drive.

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Taking OS/2 benefits to bank

ON SITE

BY PATRICIA KEEFE
CW STAFF

BALTIMORE — The potential for a million-dollar payoff usually translates into the right reasons to explore and implement leading-edge technology. With that kind of motivation, Chevy Chase Bank has created a sophisticated, OS/2-based front end to its host-based applications that is expected to provide a significant competitive advantage and improve customer service.

The application process for obtaining a mortgage has always been a tedious, inexact process. The reward for weeks of trading phone calls and shuffling paper back and forth between multiple financial institutions can end up in credit rejection for the buyer and lost selling time for the home owner. Even when the loan is granted, the process can still alienate customers.

Looking to budge its market share a point or better, Chevy Chase subsidiary B. F. Saul Mortgage quickly concluded that its rates were competitive. But what if it could promise the participants in a real estate transaction a virtually on-the-spot mortgage commitment backed up by more accurate data?

Enabling the bank to differentiate its service was the opportunity that Bob Spicer, a senior vice-president and information systems director for Chevy Chase, needed. The goal was to be more responsive to consumers by providing a commitment within minutes, vs. weeks, and to close the loan within a few weeks, rather than a month or more.

"We wanted the consumer to know up front what needed to be done to secure the loan. We wanted no surprises," Spicer said.

The idea was to use laptop computers to create an on-line conference of sorts, bringing all the diverse parties and pieces of information together — the loan officer, the realtor, the customer and (logically) the underwriter, as well as information transmitted to the laptop from credit bureaus and the mortgage insurer.

After 14 months of development and barely 30 days off the drawing board, Mortgagevision service is already winning plaudits. It has also had an impact on how the bank does business.

The biggest impact is in the quality of information captured at the point of sale. Before, it all might not have been collected at one time, and the officer also had weeks to correct mistakes. No more. "It's put more responsibility up front," Spicer said.

Deceptively simple

The simplicity of what users see on the laptop belies the layers of sophisticated technology lurking in the background. Mortgagevision was built from the ground up using IBM's Common User Access (CUA) rules, Spicer said. Elements of the graphical-oriented application include IBM's OS/2 Extended Edition, Presentation Manager and Easel graphical development tool, as well as an intuitive expert system from Cogensys Corp.

The product incorporates links between OS/2 clients and servers to a host database, between Chevy Chase and its mortgage insurers and credit bureaus and between the laptops in the field and the home office.

The linchpins to the system are Easel and Cogensys' Judgement Processor expert system. In order to speed the loan process, Spicer needed to quicken and ease access to both mainframe data and applications. Employing Presentation Manager's graphical interface and menu structure in the foreground, he turned to Easel to hide IBM 3270 complexities. OS/2 users now have one common view of any of a number of mainframe programs without having to learn multiple command sets.

Congensys' expert system, which lies at the heart of the operation, was chosen both because it is not rules-based and because it could be trained by end users without IS intervention. "We really liked the fact that Cogensys was a true server application. By isolating it on a server, we were able to cut down on the size of the underwriter's workstation," Spicer said.

The office-based underwriters work with IBM Personal System/2 55SXs running OS/2 and the expert system-based Mortgagevision. These workstations are connected to a PS/2 Model 70 server running OS/2 Extended Edition and Easel. The local-area network is linked to an IBM 3090, which is used as a data repository and a gateway.

Loan officer laptops

About 70 loan officers in the field use Compaq Computer Corp.'s 286/LTE laptop, which ties into the mainframe via a PS/2 Model 60. Communications software from Network Software Associates that incorporates an IBM-compatible High Level Language Application Programming Interface protocol runs on both the host and the laptops.

Another piece to the system puzzle utilized a voice processing system from Atlanta-based Syntellect Corp. Rather than chase loan officers with sometimes fruitless phone calls, users awaiting a loan decision can call into the host, punch in their applications number and hear a computerized voice recite the current status of their loan.

Mortgagevision is expected to kick off a chain reaction of satisfaction from customers. Realtors, for example, can more easily qualify potential buyers. The bank, which has eliminated a lot of redundant data entry and the resulting paper float, is looking not at the prospect of fewer employees, but increased business.

Chevy Chase is ready to roll

If it looks like Chevy Chase loan officers have wide-ranging information at their fingertips, it is because they do — thanks to an intricate system that relies heavily on an expert system fueled by multiple data feeds fronted by a graphical interface.

The Mortgagevision loan application service is set in motion once field-based loan officers transmit loan information to the bank's mainframe. In turn, it notifies the underwriter, who is stationed on an OS/2 Extended Edition network. The underwriter then integrates mainframe-based data into the OS/2 platform.

This is done via IBM's Easel, which provides a Presentation Manager interface up front while dealing with the 3270 in the background. "Easel lets you extract information from multiple applications on multiple hosts. I can bring together all the information necessary to bear on the problem into a single integrated view that is very user-friendly," said Bob Spicer, Chevy Chase's director of IS. The user just points and shoots.

Once the underwriter gets the credit and application data, it is sent off in real time to the mortgage insurer via a host-to-host link using a 3090 as the gateway. Once the mortgage insurer has responded, Easel goes back into the mainframe to grab additional applicant credit information and then sends all collected and processed data over to the Cogensys Corp. Judgement expert system, which resides on a dedicated Personal System/2 Model 70 server.

"We spent about a year training it. We took the problem of underwriting a loan and broke it into a number of problem sets and then trained it to experience what we said were good and bad loans. Then we taught it how to render a final decision," Spicer explained. If the system encounters a decision it has not seen before, it logs it so that bank officers can study it to determine the proper reaction. The final decision is relayed back to the field. Because the laptops run MS-DOS, Spicer's team used Microfocus' Cobol/2 and Dialog Systems to build an IBM Common User Access-compliant, but still text-based, view of what the underwriter has on his graphical-oriented screen.

The laptops communicate using Network Software Associates' (NSA) Elite, which allows a Cobol-based program to literally call an IBM-compatible High-Level Language Application Programming Interface to connect to a 3270 host-based application. A PS/2 Model 60 attached to the host acts like a 3174 controller. With additional NSA software and four IBM Artic cards, the hub can serve 32 ports.

PATRICIA KEEFE

OS/2 may release 386 chip's potential

Increased RAM is the most significant benefit of the chip's 32-bit scheme

BY CHARLES VON SIMSON
CW STAFF

One of the most touted features of OS/2 is its promised support for the 32-bit memory address capabilities of the Intel Corp. 80386 chip. While the benefits of a 32-bit architecture are significant to developers, for end users they are moderate at best.

Despite the hoopla surrounding the speed of the 386, standalone users working with applications such as personal computer databases, may notice only marginal jumps in performance. Unlike other OS/2 features, such as multithreading, the 32-bit scheme will not enable new application capabilities.

What the 32-bit implementation of OS/2 will ultimately give the user is access to the true advantages of the 386. Most notably, the chip allows memory segments far larger than those allowed by DOS, extending the theoretical size to 4G bytes.

The ability to store that much data in memory will improve CPU performance and reduce the number of times an application will have to refer to storage media for data or code. It will also allow traditional minicomputer software, such as large databases, to run in its full implementation on a properly configured PC server.

"The 32-bit architecture will only give us a 10% to 20% performance boost," said Umang Gupta, chief executive officer at Gupta Technologies. "The 386 is fast, but today we are I/O-bound. If we begin to use multiple disks, we may become CPU-bound. The enhanced memory capability will give us a lot of help in internal development."

For more CPU-oriented applications, there will be greater enhancement of performance. "We are running [applications] today on a 386 as though they were on an old PC because we have to support the least common denominator for customers, and today that is the 8088," said Ken Whittaker, former head of the advanced technology group at Software Publishing Corp. "We simply can't support different [applications] for different machines. OS/2 truly engineered for the 386 and 486 is important."

While performance will improve, the real story of 32-bit architecture is that software developers will finally be released from the horrors of the segmented memory model. Under DOS, memory is segmented in 64K-byte pieces, which limits the code that the 286 chip can support in random-access memory. That segmentation is unnecessary with the 386.

"Ultimately, development may be the most significant contribution of OS/2," said Cameron Myrhvold, Microsoft Corp.'s director of strategic marketing for OS/2. "With the flat memory vs. the segmented memory of the 286, we are casting the net wider, talking about the ability to take advantage of the 386 and 486 chip."

While OS/2 will support 32-bit applications with the delivery of OS/2 Version 2.0, it will largely remain a 16-bit operating system for the foreseeable future. Microsoft officials said that while support for a flat memory structure and 16- and 32-bit applications is important, it can be supported by a 16-bit system. As a result, Microsoft plans to phase 32-bit code into OS/2 for the next several years, but does not see it as a top priority.

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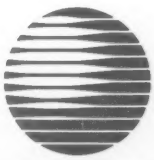

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The right choice.

Apple anticipates multimedia market

BY JAMES DALY
CW STAFF

SAN FRANCISCO — Apple Computer, Inc. Chairman John Sculley is predicting that the promise of multimedia applications will deliver his company from the storm clouds darkening its position as one of the leading technological innovators of the computer industry.

During an address at the recent annual Macworld Exposition, Sculley said Apple will bound out of the starting gate in the emerging multimedia market by leveraging its reputation for simplifying computer usage. Multimedia allows video, sound, animation and graphics to interact on-screen.

With its profit growth flattening, officials at the Cupertino, Calif., firm are anxious to establish a base camp in the potentially lucrative market. "The ramifications [of multimedia] will be nothing short of extraordinary," Sculley said, likening the computer industry today to the motion picture field just before the advent of integrated sound.

However, Sculley said that key to Apple's emergence in the multimedia market is the delivery of System 7.0, a revamped version of the Macintosh operating system scheduled for release in late summer or early fall.

The new system will be able to handle the larger memory required in multimedia applications, and it will include increased cooperative processing abilities and an enhanced series of fonts.

While Apple officials have blown the horn for multimedia before, talk seemed to finally gel into reality during the four-day show, as dozens of vendors exhibited multimedia applications.

San Francisco-based Macro Mind, Inc., for instance, introduced software said to simplify the creation of multimedia presentations, while San Diego-based Silicon Beach Software presented an elaborate showcase of multimedia displays.

The new opportunities are sending a charge through users. "Our people on campus are more enthusiastic today than they've ever been about Apple," said Richard Conrad, director of computer services at Bowling Green University in Bowling Green, Ohio.

Analysts said that many more applications should be forthcoming in the next year because of the opportunity the market presents.

One vendor cited an example of multimedia in which an off-duty physician could call up recent X-rays from home and consult with an on-duty doctor.

"Multimedia will eventually become a big part of how we deal with computers," said Tim Bajarin, an analyst at Creative Strategies Research International in Santa Clara, Calif.

MICRO BITS

Nantucket's tech island in USSR

Personal computer software publisher **Nantucket Corp.** recently announced that it has opened a sales, support and training center in the Soviet Union. The Moscow-based center, staffed by Soviet citizens, will offer technical support for its products and provide a base for the company's sales efforts within the Soviet Union.

Xcellenet, Inc. has signed an agreement with **Stockholder Systems, Inc.** (SSI) that will enable SSI to incorporate Xcellenet's graphical interface-based network software into SSI's Network Banker, a financial application for IBM environments. The combined product will allow users to dial into a secure central system and download information to the desktop.

Wordperfect Corp.'s latest release of Wordperfect 5.1 will include spreadsheet link support for **Borland International**'s Quattro Pro and Quattro spreadsheets. Priced at $10, an interim update to Version 5.1 — dated Jan. 19, 1990 — allows users to integrate Borland's spreadsheet data into their Wordperfect documents. Updates from previous versions of Wordperfect cost $85.

Lotus Development Corp. recently picked up two of the awards offered under the **Software Publishers Association**'s Excellence in Software Awards program. Lotus Notes captured the "Best New Business Software Product" category, and Magellan won for "Best Utility/Communications Product."

Separately, **Lotus** announced a joint marketing agreement with **Odesta Corp.** The two will cooperatively market Geoquery, Odesta's business mapping software, with Lotus' Marketplace, a recently introduced compact disc/read-only memory-based sales prospecting and marketing tool for Apple Computer, Inc. Macintoshes. Under the terms of the deal, Lotus will include a special version of Geoquery 2.0 on its Marketplace demonstration and sample data disc, as well as a special discount purchase coupon.

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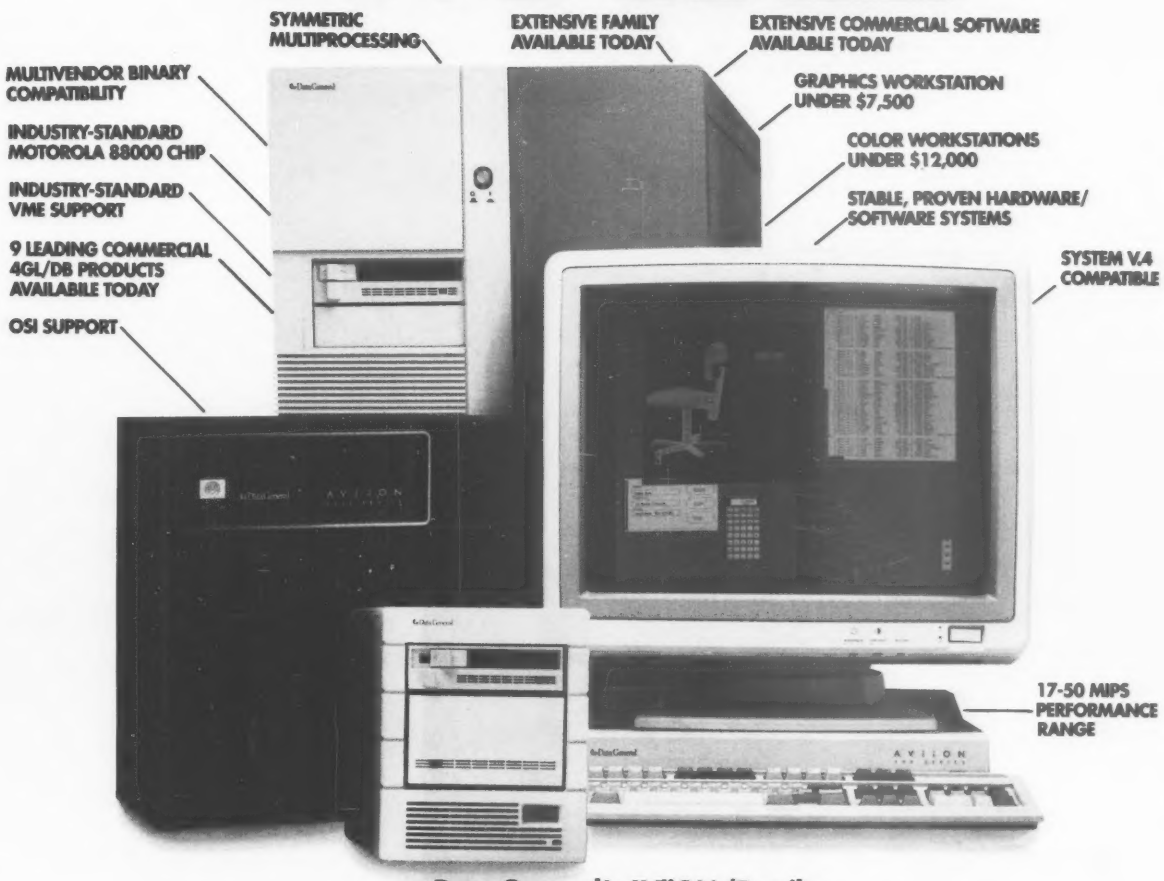

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Barney

CONTINUED FROM PAGE 35

It only wants its spreadsheets to be dominant on Apple Macintosh computers and on IBM PC-type machines upgraded to run either Windows or OS/2 Presentation Manager. And it wants to supply the local-area network operating system.

At first blush, it appears that Lotus wants to dominate the entire spreadsheet universe. Why else would it develop products for DEC VAXs and IBM mainframes and then buy a huge networking firm in Utah? Each of those moves into new markets gives Lotus the leverage it needs to promote sales of PC spreadsheets.

In reality, these moves are simply a ploy aimed at enabling Lotus to dominate the biggest segment of the software market — the IBM PC side — rather than selling 1-2-3 for mainframes or minis.

Despite Lotus' attempts to make 1-2-3 ubiquitous, there will be head-to-head competition between Microsoft and Lotus for the PC spreadsheet dollar. In this arena, Microsoft has the more cohesive strategy, while Lotus has the more interesting strategy.

Microsoft has a more cohesive graphical desktop strategy because it followed its own advice: Write for Windows first and then move to Presentation Manager. With Windows 3.0 promising to look and act like Presentation Manager, this strategy makes more and more sense. Toss in Microsoft's nearly identical and successful product for the Macintosh, and you're sailing.

Lotus, on the other hand, is trying to knock off Microsoft with pure technology. The guys from Cambridge have a theory. They believe that a graphical user interface such as Windows or Presentation Manager is just window dressing. A graphical spreadsheet is no better than a character-based spreadsheet if there is no underlying revolution within the spreadsheet engine itself.

So Lotus set about attempting to revolutionize that engine by adding true three-dimensional worksheet capabilities — as opposed to Microsoft's pseudo-3-D spreadsheet linking. That was what 1-2-3 Release 3.0 was all about.

Then they took this capability and added some graphical window dressing and linear programming-style "goal-seeking" abilities to further advance the spreadsheet engine. That's what 1-2-3/G is all about..

Despite words to the contrary, Lotus has been quietly struggling to keep pace with Microsoft's spreadsheet technology.

It was Microsoft that pioneered "spreadsheet publishing" with the high-quality font and graphing ability of Excel. This forced Lotus to pick up Allways, a system for presenting spreadsheets.

Excel also beat 1-2-3 in providing spreadsheet linking, which allows small worksheets to exchange data and, in some sense, act as one. It then beat Lotus onto the Presentation Manager platform.

All these maneuvers may well be irrelevant, because Lotus has big, influential friends such as IBM and Novell. In the final analysis, it may be IBM, which loves an orderly Big Blue-dominated universe, that determines the victor.

Just as IBM sided with Microsoft for PC operating systems, it has anointed Lotus as its spreadsheet partner.

And that may be more important than multiplatform spreadsheets, new technology and a merger with Novell put together.

Barney is editor in chief of *Amiga World*.

Sony plans Unix laptop workstation

IDG NEWS SERVICE

Sony Microsystems recently announced plans to introduce News, a Unix-based portable workstation. Shown at Cebit '90 in Hannover, West Germany, the so-called "laptop workstation" weighs about 17 pounds and feaures an X Window System-based user interface.

Running under Unix 4.3 from the University of California at Berkeley, the laptop is equipped with a 25-MHz Motorola, Inc. 68030 microprocessor and features a 68882 math coprocessor, 8M bytes of internal memory (expandable to 12M bytes), a 240M-byte hard disk and a 1.44M-byte 3½-in. floppy disk drive.

The new machine's 12-in. LCD has a resolution of 1,120 by 780 pixels. Like other models in the Sony News family, this workstation has an audio interface at 8 or 16 bits with analog/digital and digital/analog converters in mono and stereo, together with Ethernet interfaces, a small computer systems interface. The machine also supports communications protocols such as Sun Microsystems, Inc.'s Network File System and Transmission Control Protocol/Internet Protocol.

The price of the laptop workstation is expected to be similar to that of the Apple Computer, Inc. Portable Macintosh at $7,981. According to Sony, the system is the first portable workstation. Sony plans to gain a 20% share of the Intel Corp. 80386-based laptop market in Europe.

Lurking behind the scenes

PCs help create stunning effects for 'The Phantom of the Opera'

ON SITE

BY RICHARD PASTORE
CW STAFF

NEW YORK — Bellowing in outrage, the black-draped phantom cut the cable dangling the three-quarter-ton chandelier over the orchestra seats. The audience shrieked as the mass of brass and crystal plummeted toward them.

Backstage, a technician also shrieked when he realized the personal computer controlling the massive theatrical prop had failed to execute its commands. Heroically, the backup PC kicked in and brought the chandelier to a successful landing on stage — and on cue. The scene was saved by an IBM PC AT.

Though fictitious, this systems scene has been staged and rehearsed as carefully as the Broadway production the computers serve — Andrew Lloyd Webber's *The Phantom of the Opera*.

Two programmable controllers communicating through two ATs control the 53 elaborate, mechanized effects that have helped make *Phantom* one of the most popular theatrical productions in recent years. Choreographing the $1 million system is Allen-Bradley Co., the Milwaukee-based industrial automation subsidiary of Rockwell International Corp.

One of the two PCs runs the "flying" pieces — the elements on the set that literally fly through the air. The other operates mechanized scenery at stage level. Sometimes as many as 15 set pieces are moving simultaneously during the show.

The PCs are configured with

PCs have won *a role as high-tech stagehands*

8M bytes of memory each. The boxes run DOS, but New York-based show management firm Jeremiah Harris & Associates and Allen-Bradley designed their own operating interface.

When *Phantom* first appeared on Broadway two years ago, the show's management decided for the first time to automate this mechanized menagerie. Computers were to provide a safer, more consistent and more economical approach to staging.

In the original, manually operated London production, the chandelier was moved by hydraulic lifts hanging in the ceiling. Such lifts are dangerous, according to Lenora Seckinger, a spokeswoman at Harris.

"The lifts can drip oil, break down and fall. We needed something that was safer and better to control, especially with the chandelier hanging over the audience's heads," she said.

Harris turned to Allen-Bradley, which won the bid based on its reputation of automating such extravaganzas as Walt Disney Co.'s theme parks and General Motors Corp.'s new-car shows.

The biggest challenge was designing the fault-tolerant software, which took a year to develop. "If a piece [of scenery] jams mechanically, the software will recognize that it's not moving," said John DeGroot, an Allen-Bradley account manager. The software then locks up other pieces that might collide with the jammed piece while finishing the movements of those not on a collision course.

The system acts as its own understudy as well. If one PC goes down, the other is designed to kick in within 50 msec, DeGroot said. Besides improving safety and consistency, the two PCs reduce the number of stagehands needed to run the show.

"Two people run the computers as opposed to maybe 20 that would have to run the scenery," Seckinger said. Though union rules require a minimum number of stagehands on the scene, Seckinger said Harris can save $8,000 to $10,000 per week by using 10 fewer workers.

Just like the actors, the system made its share of bloopers during rehearsals. "There were problems at first with the timing of the chandelier fall. Sometimes it would fall too slowly, sometimes too fast," Seckinger said.

But the PCs grew into their roles well. To Seckinger's knowledge, there has never been a need to use the manual override controller.

Allen-Bradley has also won contracts to automate the Los Angeles and Toronto *Phantom* productions. A similar system will travel with the mobile *Phantom* troop, which began setting up in Chicago last week to prepare for its June 2 opening night.

IBM gets on the AIX CASE with vendor partnerships

BY AMY CORTESE
CW STAFF

Bolstering its fledgling technical CASE strategy, IBM recently formalized marketing partnerships with seven computer-aided software engineering vendors whose tools figure prominently in its AIX CASE offerings.

IBM will market products for its AIX-based platforms from Atherton Technology, Inc.; Cadre Technologies, Inc.; Oasys, Inc.; Saber Software, Inc.; Sage Software, Inc.; Unipress Software, Inc.; and Verdix Corp. Many of the products will be bundled into IBM's AIX CASE Solutions, a series of products combining software from IBM, the above vendors and other firms that is due to be rolled out during the next several months.

IBM is hoping the partnerships will help it establish a presence in the technical CASE market, estimated to be growing from $368 million last year in the U.S. to over $1.5 billion by 1995, according to market research firm Ovum Ltd. IBM will face competition from vendors such as Sun Microsystems, Inc. and Hewlett-Packard Co., which currently have workstation-based CASE offerings.

Jack Clemmons, IBM's manager of technical CASE, said that IBM's AIX CASE strategy is still evolving and that it could be linked more closely with the AD/Cycle offerings in the future. Unlike IBM's AD/Cycle strategy, which it dictates to its large base of commercial users, the AIX strategy will be driven by standards and user requirements, he said.

"Not only are we new in the business, but it would be impossible for any vendor to declare standards" for the emerging technical CASE market, Clemmons said. What may sound like uncertainty is IBM's acknowledgment that it must listen to the market on this one, he said.

Desktop

FROM PAGE 35

low-cost terminals in place of networked PCs.

According to Szypulski, the company is moving toward Unix, but for now, "Theos is pretty strongly embedded," he says. He adds that the division "currently has Theos installed in six warehouses in the U.S., and it would take quite a bit of time and effort to convert them."

When Bonnie Garrett had to make a decision on a multiuser system, "It was a choice between [The Software Link's] PC-MOS and Unix. It seemed as though PC-MOS would be a little easier for us to manipulate at the user end. I hate to use a cliche, but Unix is not user-friendly at all," she says.

According to Garrett, who is director of information systems at Telecheck, a check authorization service in Oberlin Park, Kan., training users familiar with DOS on Unix would have been extremely costly. With PC-MOS, Garrett says, all she needed to teach users were some additional features not found in DOS, such as the ability to run multiple tasks from one terminal.

Telecheck has been a user of PC-MOS for five months, and Garrett says she would not switch to anything else. One of the features that most attracted her to the product, she says, was its ability to allow the operator of the main console to switch between users' machines. Using this feature, the console operator can train the firm's 32 users in applications and assist them with problems without having to leave the console and go to other parts of the building.

Because Telecheck expects 100 users to be on the system eventually, Garrett uses PC-MOS in combination with Netware to give users greater speed in running applications. "One application that used to take an hour to run now takes about a minute," she says, adding that this has allowed her to cut her staff through attrition. This was possible, she says, because time that users used to spend waiting for processes to run can now be spent productively.

Telecheck's Netware program runs on an Intel Corp. 80386-based server and uses two 386-based systems as PC-MOS-based nodes.

Bogging down

John Houck, who assists Boston Computer Society members with the system, says that the PC-MOS installations he deals with are "almost all database applications" and that he generally recommends the system for situations in which there are less than 10 users. He states that beyond this number, even 386-based servers begin to get bogged down, because all the processing is being performed on the server.

According to Houck, the advantages of a PC-MOS system over a standard LAN include lower costs through the use of terminals rather than PCs, no network cards and the ability of the system to run over standard telephone wire. However, he admits that "networks are faster — no doubt about that" and adds that in some I/O-intensive applications, such as several people using a word processor simultaneously, "a fast typist can outtype PC-MOS."

For users who do not need the multiuser aspect of a package such as PC-MOS (of which there are currently 132,000 licenses), there are several multitasking software programs available. These programs allow more than one program to run simultaneously — much like Microsoft Corp.'s Windows — but do not provide the graphical interface of that system.

One of the most popular of such programs is Desqview by Quarterdeck Office Systems in Santa Monica, Calif., which allows users to run programs in multiple windows on the same screen. Desqview's installed base was 1.2 million as of January 1989, according to the vendor.

Joe Bottom, also with the Boston Computer Society, assists users in tailoring Desqview to their needs. He says that most of the businesses using the program are small, such as a dentist whose secretary is able to use his PC while a database is performing a four-hour sorting procedure.

Another reason users are going to Desqview, Bottom says, is to integrate multiple programs into a unit that allows easy access to each individual program. He states that some users did this when they "sort of outgrew Microsoft Works" (an integrated word processing, spreadsheet and database program) and wanted to integrate programs with which they had become familiar. Bottom says, however, that "transferring files [in such an arrangement] is imperfect" and that communications can be tricky.

For example, users trying to download files while running another program must be careful that no other programs usurp access to communications ports, or they will lose data. If set up correctly, however, users can access a LAN through one window in Desqview while performing other tasks on the PC itself.

As for whether these products are simply a stopgap before the rush of OS/2, Unix and networks to the desktop, Marshak states: "These are an interim measure, but just how long they will last is debatable. The window could be a very wide one."

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NEW PRODUCTS

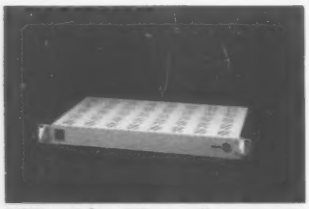
Peripherals

RGB Spectrum has introduced a product that enables users to mix computer video signals in real time.

The RGB High Resolution Video Mixer combines video outputs from two genlocked workstations or graphics systems displaying up to 1,280 by 1,024 pixels. One output calculates foreground images while the other calculates background images. For three-dimensional scenes, multiple workstations can be connected by using two or more mixers.

The RGB video mixer costs $8,995.

RGB
2550 Ninth St.
Berkeley, Calif. 94710
415-848-0180



RGB's Video Mixer *allows users to mix real-time computer video signals*

Software applications packages

Stockholder Systems, Inc. has announced a personal computer-based information delivery system for banks and their corporate customers.

Network Banker allows data developed on a bank's mainframe to be distributed to customers via an Intel Corp. 80386-based PC at the bank and a DOS-based PC at the customer's site as a link.

The product costs $75,000 to $125,000, depending on the number of modules purchased.

Stockholder Systems
4411 E. Jones Bridge Road
Norcross, Ga. 30092
404-441-3387

Solea Systems, Inc. has introduced Text Manager 2.0 for the Microsoft Corp. Windows environment.

Version 2.0 adds a facsimile capability that allows users to fax text and PCX graphics files. A Group Send feature enables users to automatically fax documents to multiple destinations; the product also can edit up to 10 documents simultaneously in multiple windows, the vendor said.

Text Manager 2.0 is slated to ship this month for a list price of $100.

Solea
61 Bennington
Irvine, Calif. 92720
714-551-1852

Macintosh products

Hyperglot Software Co. has begun to ship its foreign language software products for Apple Computer, Inc. Macintosh systems to users of MS-DOS platforms.

The software packages incorporate The Speech Thing, a digital-to-analog converter manufactured by Covox, Inc., to provide MS-DOS users with access to digitized sound. The first products to ship include Spanish Pronunciation Tutor, French Pronunciation Tutor, Spanish Tense Tutor and French Tense Tutor.

Each software package costs $59.95. The price of The Speech Thing is also $59.95.

Hyperglot
505 Forest Hills Blvd.
Knoxville, Tenn. 37919
615-558-8270

Peter Norton Computing, Inc. has introduced The Norton Utilities for the Macintosh, a suite of utilities for Apple Computer, Inc. Macintosh systems.

The product includes the Norton Disk Doctor, which can diagnose and repair more than 45 types of disk errors; Unerase, which provides users with three techniques to find or recover lost or damaged files; Format Recover/File Saver, which can change formats of accidentally erased hard disks; and Speed Disk, which can be used to consolidate and prioritize data. At least 1M byte of random-access memory is required.

The product costs $129. It is also being bundled with Microtech International, Inc.'s line of hard disk drive products.

Peter Norton
9th Floor
100 Wilshire Blvd.
Santa Monica, Calif. 90401
213-319-2000

Personal computer systems software

Theos Software Corp. has started shipping Theos 386 Version 3.1, a 32-bit, multiuser, multitasking operating system with built-in software disk caching.

The product was designed to run on Intel Corp. 80386-based IBM Personal Computer ATs, compatibles and IBM Personal System/2s. Up to 16M bytes of system memory can be allocated for disk caching, the vendor said. Other features include multisessioning, a virtual device interface and support for graphics standards such as Video Graphics Array.

Multiuser licenses for the product begin at $799. The list price for a single-

user license is $399.
Theos
Suite 360
1777 Botelho Drive
Walnut Creek, Calif. 94596
415-935-1118

Data storage

The XY600RW, a 600M-byte, erasable optical disc drive from Xyxis Corp., is now equipped with OS/2 compatibility.

The product's small computer systems interface (SCSI) board and OS/2 software driver enable it to be used with Microsoft Corp.'s OS/2 Version 1.2. Each of the drive's 5¼-in. rewritable cartridges stores up to 600M bytes of data, and the cartridges can be erased more than one million times, the vendor said.

The price of the XY600RW is $4,995, excluding an SCSI kit. The rewritable cartridges sell for $275.
Xyxis
14631 Martin Drive
Eden Prairie, Minn. 55344
612-949-2388

Practical Computer Technologies, Inc. has announced a new generation of its Extra High Density 3½-in. microfloppy add-on drive system.

The Practidisk ED series includes a universal upgrade for IBM Personal Computers and compatibles that enables PCs to use industry-standard 3½-in. microfloppy and 5¼-in. floppy disks. The 4M-byte microfloppy drive employs a perpendicular recording technique that provides nearly 3M bytes of formatted capacity, the vendor said.

A complete Practidisk ED series external subsystem has a list price of $598. An internal version for mounting in a half-height bay costs $478.
PCT
3972 Walnut St.
Fairfax, Va. 22030
703-385-3332

Software utilities

Leber Enterprises has announced a menu-driven software utility program that automates the process of making batch-file menus.

Batch'in combines expert system techniques and a dedicated screen painter to produce full-color menu screen files that are compatible with the ANSI.SYS screen driver and MS-DOS-compatible batch files, the vendor said.

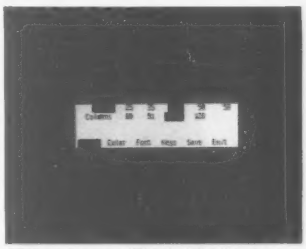
The menu file writer supports ANSI.SYS and ASCII menu screen files as well as monochrome and color menus.

The utility costs $40.
Leber
Box 9149
Peoria, Ill. 61614
309-693-0634

Stairway Software, Inc. has released Screenextender for Wordperfect 5.0/5.1.

The screen manager utility provides screen widths ranging from 80 to 128 characters, which enable users to view the entire width of documents they are editing. It can run on an IBM Personal Computer, XT, AT, Personal System/2 or compatible equipped with a Video Graphics Array-, Enhanced Graphics Adapter-, Color Graphics Adapter- or Hercules-compatible video card. Menu Key and Swap Key features reportedly enable users to change screen sizes while editing.

The price is $79.95.
SSI
Suite 204
700 Harris St.
Charlottesville, Va. 22901
800-782-4792



SSI's screen *utility for Wordperfect*

Development tools

Version 4.0 of PC-lint, a source-code analysis tool for the C programming language, has been announced by Gimpel Software.

Version 4.0 of the program includes more than 70 diagnostic messages and provides diagnostics such as checks for compile-time objects. An elective notes error message category consists of 28 additional messages including implicit and explicit conversions.

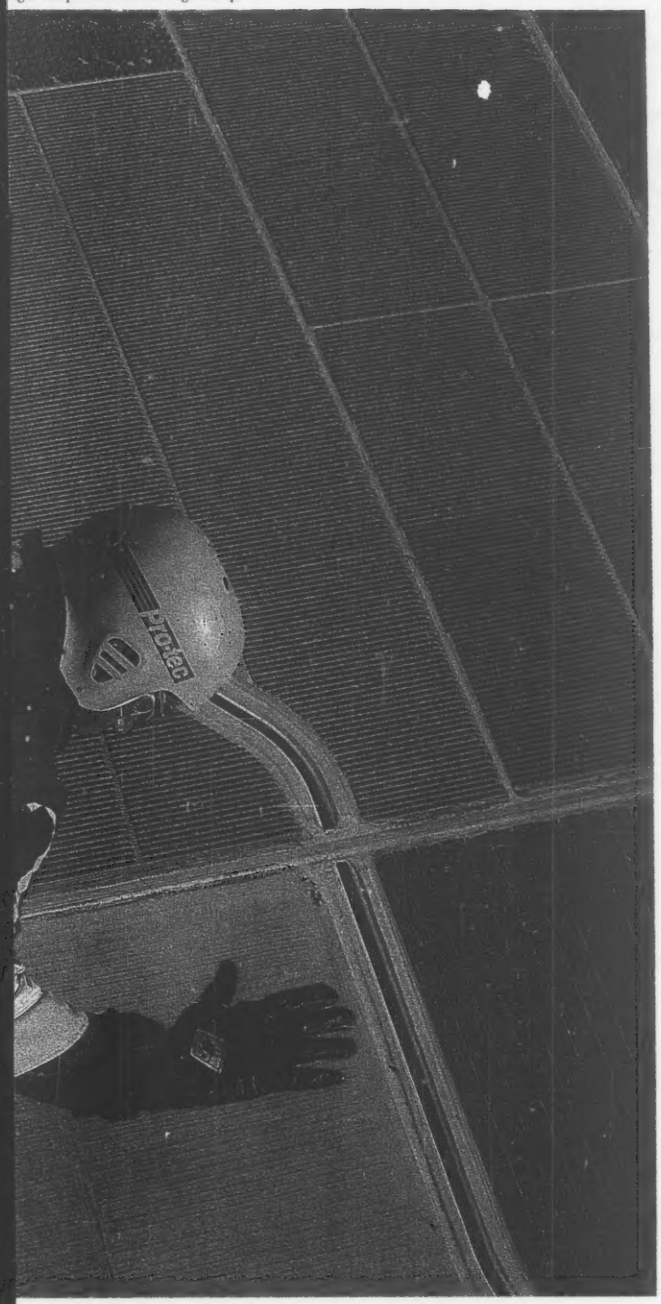
PC-lint runs under MS-DOS or OS/2 with 196K bytes of memory. It is available for $139.
Gimpel
3207 Hogarth Lane
Collegeville, Pa. 19426
215-584-4261

Computer-Aided Software Engineering Corp. has released its Cohort series of software.

The product runs on IBM Personal Computers and compatibles, Apple Computer, Inc. Macintoshes and Sun Microsystems, Inc. and Hewlett-Packard Co. computers. Cohort enables users to customize their source code before it is compiled and executed, the vendor said.

The list price for the software package for PCs and Macintosh systems is $499.
CASE
954 E. Hennepin Ave.
Minneapolis, Minn. 55414
800-552-1049

How much time ca
your database is ac



Developing and maintaining database applications usually means two things. Throwing money and people at the problem. Or squandering huge amounts of time.

Ingres gives you a third choice. Better application development tools.

Ingres's tools are more complete. You can build applications from the simplest to the most sophisticated, using tools ranging from CASE to end-user query and report writers.

And unlike competitive tools, Ingres's are fully integrated. You get a consistent interface from tool to tool, keeping both learning and development time to a minimum.

Better yet, because Ingres incorporates a full-function 4GL, you can build applications that would be impossible for conventional forms-only tools. And your applications are self-documenting, which is essential for easy maintenance.

What's more, the applications you develop are portable across networks of different computers, operating systems, even different databases—preserving your present application investments.

So before you bet your company on a database, remember: if it's going to be the best, it has to do a lot of things well.

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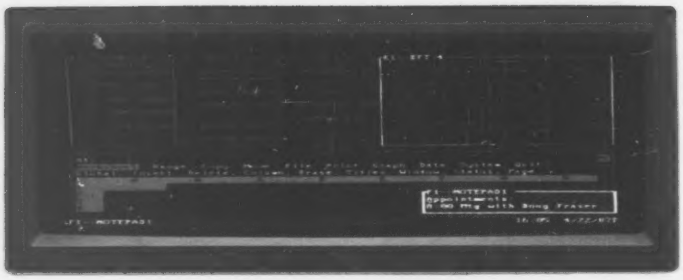

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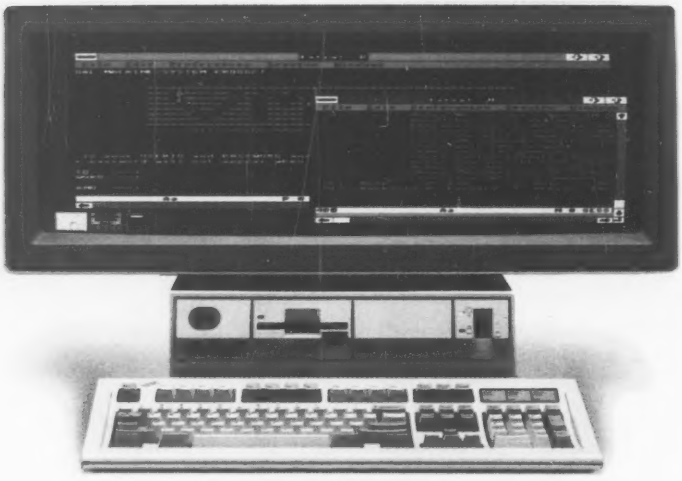

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For Microsoft® Windows capability, go for EXTRA!™ for Windows. Built from scratch as a Windows solution, it expands room for PC applications with better-managed memory.

And it shows how easy good connectivity can be. Replace cumbersome key sequences with pull-down menus and a mouse. Up to 26 host sessions, each in its own window, can be moved, sized or iconized. Ease connectivity and multi-session management with dialog boxes. Speed data transfer between sessions and applications via clipboard.

Use coax (CUT and DFT) and LANs such as IBM's Token Ring. Enjoy full IBM compatibility today and tomorrow.

For full details and **free** demo disk for either EXTRA! Extended or EXTRA! for Windows, call now: **1-800-426-6283.**

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IDC WHITE PAPER

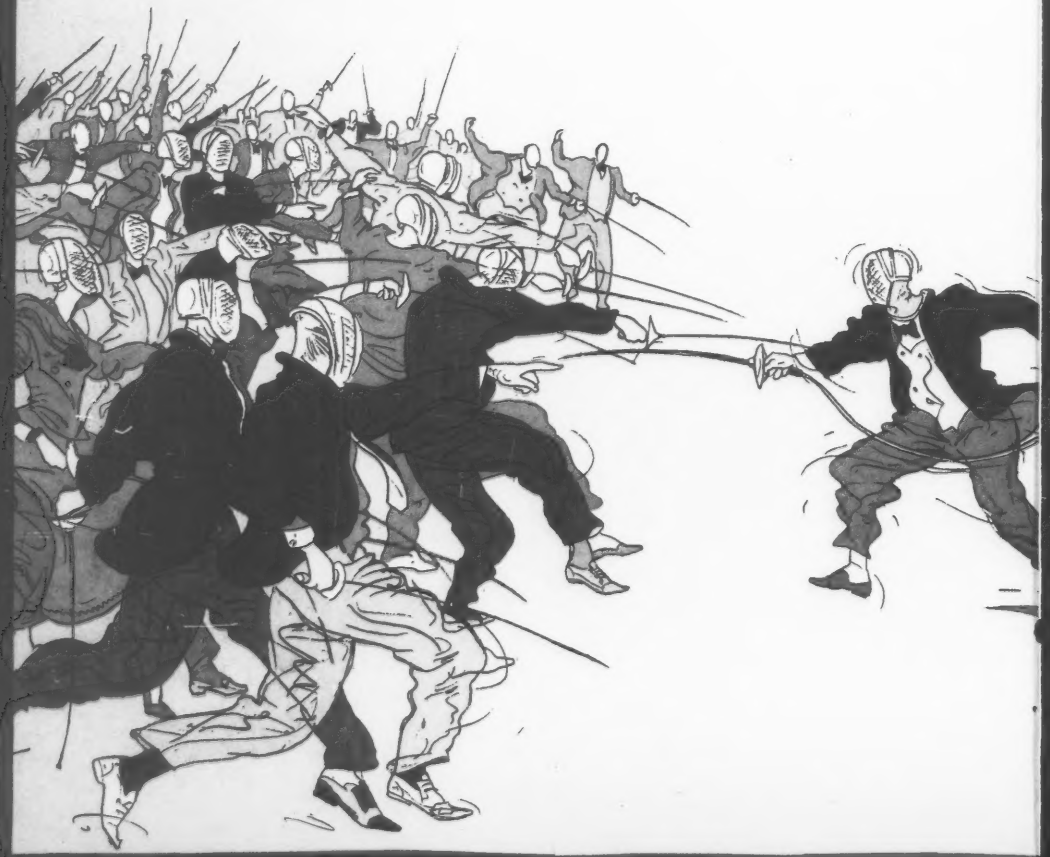
OSI: The Global Network Architecture

OSI: THE GLOBAL NETWORK ARCHITECTURE

AN IDC WHITE PAPER FOR INFORMATION SYSTEMS MANAGEMENT

In The 90s, Your Company Must Learn To Thrive Amid Unprecedented Change.

As Global Competition Systems Must Change To

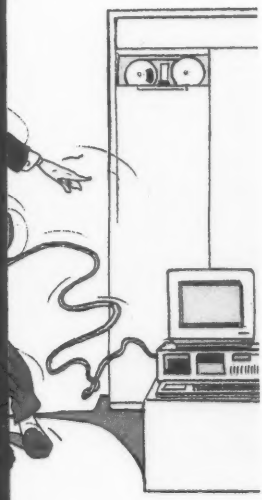


Intensifies, Information A Competitive Weapon.

Economic experts agree that the 1990s will see unprecedented competition in global markets.

Key to your company's survival in this new competitive environment will be the adoption of a new computing strategy in which information systems can truly become a competitive weapon. A strategy far more flexible and able to adapt rapidly to change than those of the past.

Open, Cooperative Computing is NCR's blueprint for such a strategy. Its openness gives you the widest possible choice of hardware and software. So you can add applications and functionality quickly.



Its client/server architecture lets you distribute computing resources more efficiently. Its intuitive graphic interface gives you transparent access to information enterprise-wide. So you can respond to customer and market needs more quickly and more effectively.

And it provides a bridge to your current information systems that preserves your present investment in systems, applications, and data.

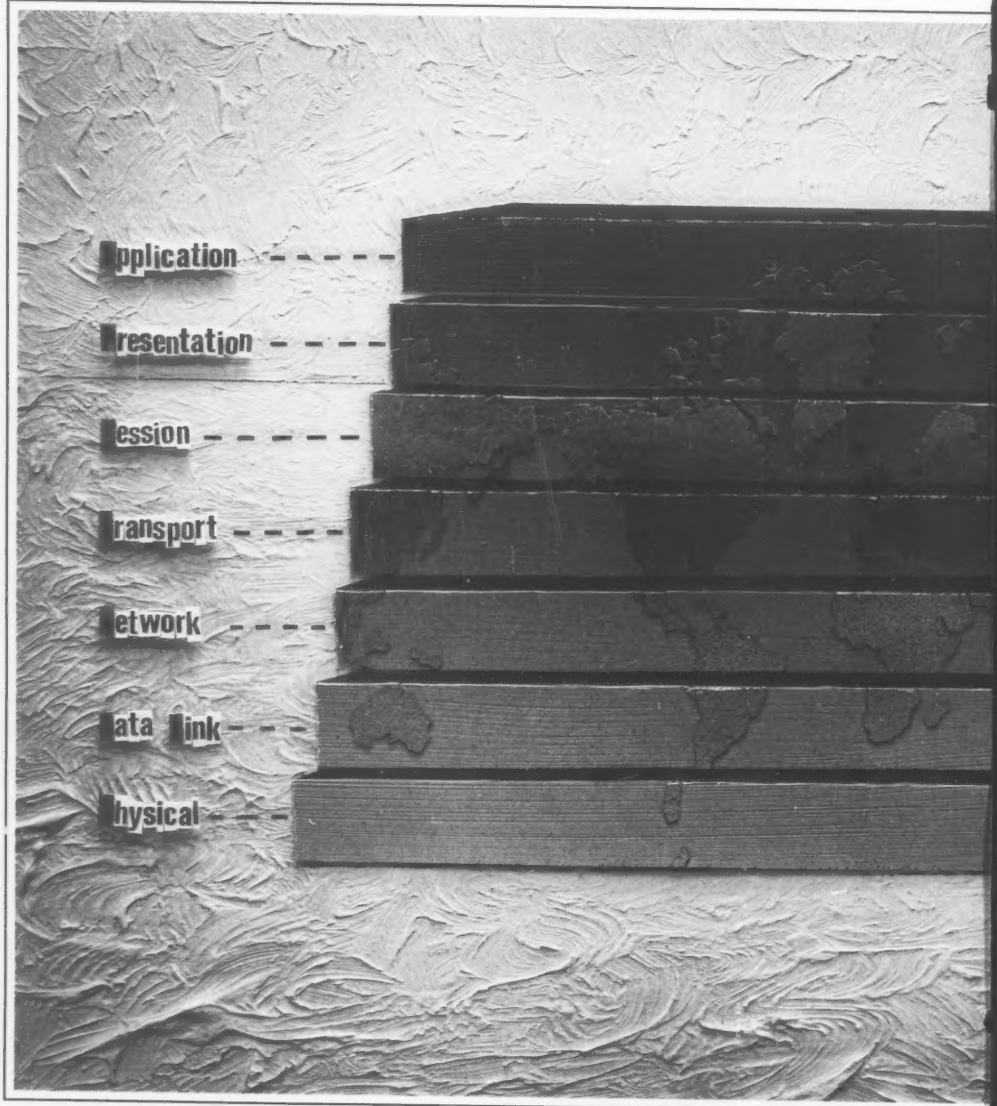
NCR is a leader in open systems solutions. We build the most complete set of end-to-end, industry-standard products. And no one has more experience connecting multivendor environments, via SNA, OSI, and other communications methods.

Open, Cooperative Computing is a strategy that will shape the future of information systems. The time to begin implementing that future is now.

For details on how to turn your information systems into a competitive weapon, phone 1-800-CALL NCR.

NCR

Open, Cooperative Computing.
The Strategy For Managing Change.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OSI

THE PAST THREE DECADES HAVE BEEN DOMINATED BY THE EXPANSION OF NEW AND NECESSARY COMPUTER ARCHITECTURES IN RESPONSE TO A DEVELOPING HIERARCHY OF USER NEEDS. DURING THE 1960s, THE BURGEONING POPULATION OF MAINFRAMES SERVICED THE INCREASING DEMANDS OF BACK-ROOM PROCESSING. DURING THE '70s, MINICOMPUTERS PROVIDED SPECIFIC APPLICATION SUPPORT FOR NONDATA PROCESSING PROFESSIONALS. THE '80s SAW PERSONAL COMPUTERS AND WORKSTATIONS SATISFY THE CRAVING FOR END-USER COMPUTING. UNFORTUNATELY FOR THOSE PEOPLE PLANNING INFORMATION SYSTEMS IN THE '90s, ALL THE INNOVATION AND CHANGE OF THE PAST 30

years have lead to a more complex, rather than a neater and cleaner, computer arena. Each new generation of hardware has survived instead of being succeeded. As a result, the networks of today must accommodate all of them - mainframes, minicomputers, PCs and workstations.

Consequently, the challenge for the '90s is not to rid ourselves of older architectures but rather to blend the new with the old in some more highly useful and manageable fashion. The '90s will undoubtedly be remembered as the decade in which computers of all kinds finally provided a whole information system that was functionally greater than the sum of its parts. The following research paper is meant to provide a general overview and status report on the progress of the Open Systems Interconnect (OSI) model for computer communications. It is not meant to be a technical journal, nor is it composed of OSI hype. Instead, it paints an optimistic, yet honest picture of the next big step in the evolution of networking computers to computers, applications to applications and, most importantly, end users to information.

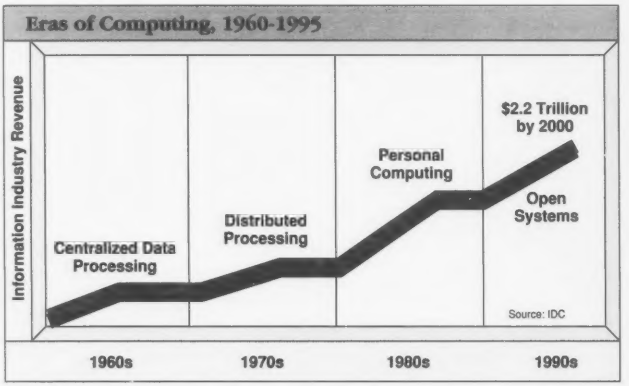
EVOLUTION TO OSI

History of OSI

It became quite apparent by the mid-1970s that computers were utilized more effectively when properly linked together. With additional advancements in distributed processing on the horizon, it became equally evident that in order to prevent users from becoming entrapped in proprietary vendor network architectures, standardization needed to take place. Since 1946, the International Standards Organization (ISO) has been involved in worldwide standards development and adoption on behalf of its almost 100 represented countries. In 1977, the ISO decided to expand its standards-setting work to include computer-to-computer communications. At that time, a formal working group was given the charter to develop the OSI Reference Model.

Why OSI?

Information systems are fraught with network architectures that are essentially closed to outsiders. In this case outsiders could be either vendors that are not already installed on the network or users that operate within a separate and different network environment. On one hand, this closed posture provides the installed vendor tremendous leverage in any system expansion. On the other hand, it severely limits the choices for users examining new hardware, operating systems and applications as well as communications and networking equipment and services.



OSI will follow in the footsteps of mainframes, minicomputers, personal computers and local-area networks as a catalyst for information industry growth.

The OSI model holds the promise of freedom from these constraints by providing a networking platform on which all vendors have an equitable chance of competing for new hardware and software systems business. In this environment, the power rests with the user community, allowing implementation decisions to be based on the best future as opposed to the installed past.

Current Status

Work has progressed over the last 12 years to the point that the primary functions of OSI are firmly adopted as international standards and are able to be actually implemented and subsequently incorporated within network architectures. Almost every major computer vendor will deliver full seven-layer OSI-based networking systems during 1990. Those vendors that significantly fall behind this schedule will face user backlash that will be difficult to overcome in the future.

For the users, these primary functions provide the base level with which to construct a networked system. Beyond these, however, there is still much work to be done. OSI network management, although having progressed nicely over the last eight years, will still require at least two more years of effort. Also, OSI application-level standards for such things as network transaction processing and distributed databases are not expected to be fully functional until 1993 at the earliest.

These caveats should not, however, discourage potential OSI implementors. Most networks currently provide users with less robust services than their corresponding offerings within OSI. Obviously, with more room to grow, OSI shows greater potential for supporting the more intense network utilization planned - and unplanned - in the future.

DEFINITIONS

The Concept of Layering

In an attempt to deal with the constantly changing nature of standards and the products that employ them, the OSI model was based on layers. As a result of that approach, it is easier for vendors to implement the model into their products. Users, who inevitably find themselves continually upgrading their networks, will also benefit from the model's modularity and cost-effectiveness.

Layering also allows more flexible configurations with respect to not only topology but also higher performance hardware support for network services. By allocating specific network duties across each of the seven layers, users and vendors can properly balance the placement of network and end nodes.

Transmission Services: Layer 1

The OSI model is quite flexible regarding the types of transmission services it supports. Older standards such as RS-232 and V.35 are supported for use in longer distance or lower performance network environments. In the higher bandwidth ranges, OSI makes use of local-area network interface standards including IEEE's 802.3 (Ethernet), 802.5 (Token-Ring) and 802.4 (broadband) as well as the more newly adopted ANSI standard for fiber-optic LANs, the Fiber Distributed Data Interface. Work is also under way to allow such recently heralded telecommunications services as Integrated Services Digital Network to support OSI-based computer traffic.

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Because of its modularity, OSI can adapt to any new transmission technology. This allows users the comfort of designing computer networks and networked applications without worrying about the communications transport method. Users will be able to make these choices during implementation, just as they would when choosing between Ethernet or Token-Ring for a PC network. This eliminates the much less appealing alternative of having the vendor make these decisions during the product design and development process.

Networking Services: Layers 2, 3 and 4

Layers 2, 3 and 4 comprise the networking portions of the OSI model. They provide support for information delivery between both intermediate nodes and end nodes. An intermediate node is one which routes information in a way that allows source and destination nodes to conduct a conversation. For example, if Node A, the source node, was to transfer information through Node B in order to have it subsequently transferred to the destination, Node C, Node B would be an intermediate node because it provides a routing function for Nodes A and C.

Within the OSI model, Layer 2, or the Data Link Layer, is exercised in transferring data from Node A to Node B and then again from Node B to Node C. Routing functions take place at Layer 3, the Network Layer, which allows Node B to determine that this data transfer is actually destined for Node C. The actual source-to-destination conversation occurs at Layer 4, the Transport Layer. Node A's Transport talks directly to Node C's Transport.

This division of responsibility within OSI will allow network managers to customize OSI to the needs of their organizations. In many organizations, OSI will initially be used as a backbone network linked to local networks running non-OSI protocols. For example, Novell, Inc. will not suddenly abandon support of its proprietary Netware IPX protocol and the large installed base of IPX users simply because the OSI protocol stack becomes available. However, for better enterprisewide connectivity, these distinct PC LANs may use OSI routers to send information to other parts of the network. This would allow the OSI backbone to support other types of communications besides PC LAN exchanges.

X.25, initially specified in 1976 by the international standards body, the Consultative Committee for International Telephony and Telegraphy (CCITT), is the most widely used OSI standard in the area of networking services. It is supported through the use of private packet-switching equipment as well as through public value-added networks (VANs) such as Tymnet and Telenet.

Application Services: Layers 5, 6 and 7

These are the services most closely related to, and controlled by, end users and network applications. They are demand-driven, meaning that as users or applications need to use the network, these layers perform their appropriate duties. For example, say user 1 on Node A wanted to send a file to Node B. The file transfer application service on both Nodes A and B would be involved in a layer seven (application) conversation. Along with this conversation, layer six (presentation) processing would occur to ensure that, upon transfer, the file would be in the format appropriate for Node B. This would then allow Node B users access to the file from their own applications. Layer five (session) would involve itself in this process by coordinating resources at both ends of the transfer, acting as the mediator between the high-level application services and the networking services below.

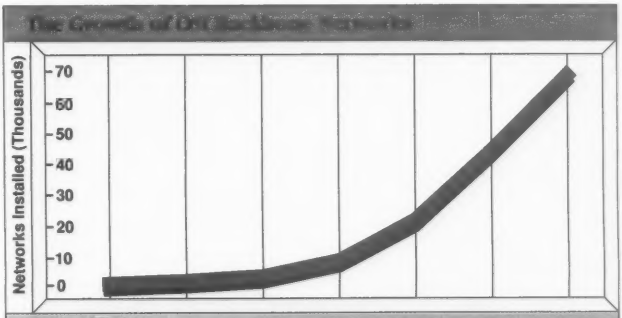
APPLICATIONS

Application suites are perhaps the most important, yet least defined, components of OSI. Designing company-specific applications for OSI networks will take IS managers quickly into uncharted waters. A number of them have been put forth.

Electronic Mail

Currently, most large organizations have installed multiple hardware platforms, which include mainframes, minicomputers, PC LANs, stand-alone PCs and other systems. Electronic mail has the potential to become the basis for common communications among these diverse computing environments. However, the reality of proprietary communications protocols, e.g., IBM's Systems Network Architecture (SNA), Digital Equipment Corp.'s Decnet and incompatible E-mail formats, such as addressing, directories and document types, make the development of a corporatewide mail system a difficult and resource-intensive challenge for IS planners. What large organizations require is a common, unifying set of specifications that allows E-mail users on one vendor's system to easily talk to other users on different systems across the corporate network.

The suite of international standard E-mail specifications is comprised of two protocols: X.400 and Office Document Architecture. X.400 enables the transfer of messages - packets of information - between users and applications. Initial work on the X.400 messaging standard has been entirely geared toward providing vendor-independent E-mail. The most important protocols within X.400 are Message Transfer Agents, which accept and transfer messages, and User Agents, which provide the E-mail interface between the end user and the mail-transfer system. X.400 can be used in several



	1988	1989	1990	1991	1992	1993	1994
OSI Nets	60	130	380	8,400	22,000	44,000	69,000
% Total Nets	0.1%	0.1%	0.2%	4.8%	11.9%	23.1%	36%

Source: IDC Applied Networks Report, 1989

IDC predicts backbone networks based on mainframes and minicomputers will experience significant growth between 1990 and 1991. This growth will stem primarily from demand by the U.S. government and DEC offering its OSI stack to Decnet customers.

Move Your Wor
Isolation To

kgroups From Cooperation.

Most companies have computer systems that were acquired on a departmental level, often from different vendors. This practice has left islands of information—workgroups divided by function, operating system, and communications protocols—barriers more formidable than any wall.

As a result, information critical to the success of the entire enterprise may not be available on a timely basis to those who need it.

A primary goal of NCR's Open, Cooperative Computing strategy is to enable an open, multivendor environment that integrates these islands into a single enterprise-wide network. To accomplish this, we've developed a wide range of capabilities adaptable to almost any customer need.

We deliver open communications systems, network applications, and network management based on OSI standards, to help make your migration to a fully OSI-compliant network easier. And we provide current system flexibility with open communications standards like TCP/IP.

If you use SNA, NCR helps preserve your investment by a continuing commitment to superior SNA connectivity, while helping you integrate this proprietary standard with open systems.

We also support standard communication interfaces like Ethernet and Token Ring and standard operating systems like UNIX,® OS/2,® and DOS.

Moving your workgroups from isolation to cooperation can make your organization more efficient, more competitive, a better team. For details, phone 1-800-CALL NCR.

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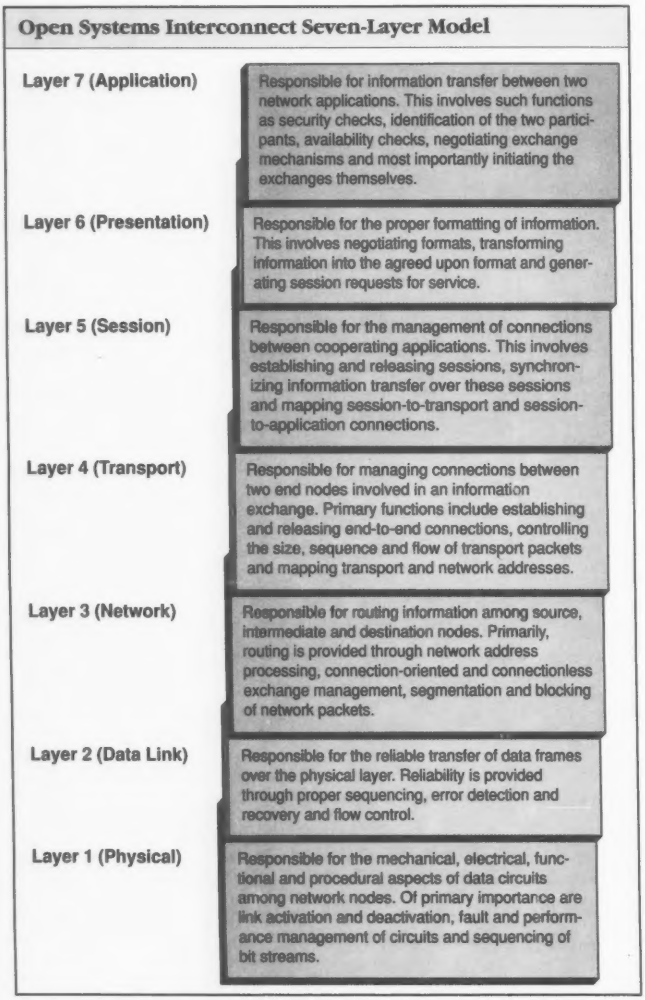
Open, Cooperative Computing.
The Strategy For Managing Change.



different capacities by large organizations, including the following:

- As a common denominator between dissimilar internal mail systems. For example, X.400 could be used to transfer mail between DEC's All-In-1, IBM's Professional Office System and Wang Laboratories, Inc.'s Wang Office since each supports X.400.
- As a link for intercompany communications. X.400 can extend the reach of a proprietary internal mail system to public or other private mail systems that support X.400.
- As a link to international offices. Because of the wide support for OSI in Europe, X.400 will help extend U.S. mail systems to offices in Europe.

X.400 has been ratified as an international standard, and a new 1988 version was recently approved by the CCITT. This newer version includes support for the delivery of multiple information streams, including data, electronic data interchange (EDI) documents, image, facsimile, voice and even audio. Obviously, X.400 is destined to become far more than just an E-mail delivery system.

Office Document Architecture is the specification for revisable compound document interchange. Compound documents contain text, data, image, graphics and voice. Office Document Architecture builds on X.400's ability to act as an envelope, defining how data is sent between two users by interpreting that information.

It is a finalized international standard, but it only contains specifications for text plus limited graphic and image capabilities. It will have to be substantially enhanced to fully manage the transfer of complete compound documents before realizing its potential. Several vendors have announced plans to utilize Office Document Architecture as a basis for their compound document architectures, but IDC believes it will not receive widespread support until 1992 at the earliest.

File Transfer Access Management (FTAM)

The FTAM protocol was designed for the exchange of files among computers and users on an OSI network. Much of the work on the protocol was derived from the manufacturing environment in which the management and proper exchange of parts and inventory information became critical as companies began applying just-in-time manufacturing techniques.

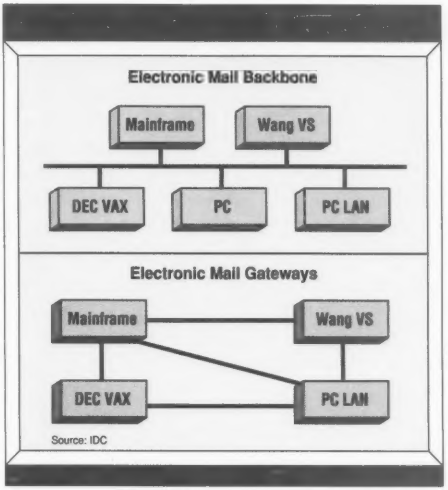
General Motors Corp. not only led the Manufacturing Automation Protocol (MAP) effort in its early years but also began requiring FTAM transfer capabilities from its suppliers. Because of its acceptance as part of the MAP effort and its early adoption date, this protocol has been widely implemented by computer vendors. It is second only to X.400 in vendor product availability at the application level.

However, MAP has not achieved the same level of success as X.400 in gaining widespread user acceptance. There are a variety of reasons for this. First, while X.400 can be easily shown to solve a common problem - incompatible E-mail - FTAM requires more creativity in terms of application development. Second, users have had other options for transferring files among computers. Some, such as remote job entry emulators, are indeed old, while others, such as tape and flat text files, are simplistic, but they have gotten the job done.

Electronic Data Interchange

EDI is defined as the electronic transfer of structured data via standard messaging protocols. The most common use of EDI is the transmission of general business documents such as purchase orders or invoices between business partners. Another important EDI application is electronic funds transfer between financial institutions. EDI is an ideal application on top of OSI because OSI networks can give organizations the universal connectivity over standard communications protocols that EDI requires.

EDI also describes how the information or business document is formatted. Several EDI standards currently exist. The two internationally accepted EDI platform standards are ANSI's X.12 and EDIFACT. Platform standards act as an underlying base for application-specific, value-added communications. X.12 is developing as the preferred U.S. EDI method, while EDIFACT is the choice for international exchanges.



The use of a common backbone provides centralized gateways for the connection of incompatible E-mail networks.

Other standards developed by industry organizations such as the Transportation Data Coordinating Committee will eventually migrate to X.12 and EDIFACT, using them as platforms while enhancing them with industry-specific extensions. Today, most EDI traffic is carried over proprietary network protocols. However, industry pilots are moving toward utilizing X.400 as the standard messaging and forwarding mechanism of EDI.

Directory Services

A collaborative effort by the CCITT and the ISO, X.500 is a set of specifications that maps out the structure of a global electronic directory. The X.500 standard specifies the structure of the directory, the types of information (objects) to be stored, how entries are to be named, the manner in which the information will be accessed by users and the types of services that will be available to users. X.500 is designed to work as an extension to X.400 electronic messaging. X.400 provides user-friendly names for its standard message envelope, while X.500 provides the services to translate user names to network addresses.

X.500 will first be available from vendors during 1990. Installation of large X.400/OSI networks will drive developments in X.500. Experimental X.500 directory usage will begin in 1991, but most large organizations will not actually implement complex X.500-directed networks until 1993.

Initially, X.500 will exist as a number of isolated directories. Individual networks will utilize one or more X.500 distributed systems architectures (DSA) to provide services to intraorganizational network users. Over time, the DSAs in each network will be connected. The result will be an ever-expanding web of X.500 directories. The Directory is the name given to what will be the ultimate realization of worldwide directory services sometime in the late 1990s.

Distributed Databases

Considering that much of today's IS budgets is spent on the development, manipulation and maintenance of information databases, OSI standards for Remote Database Access will have a great impact on expenditures in this critical area. Unfortunately, user apprehension and these lagging standards constrain the development of mission-critical access to data. This is both a reflection of their complexity and of user ambivalence toward changing what is a very complex and critical part of their IS structure. As PC LAN databases, SQL servers and object-oriented systems grow in popularity, there will be an increasing demand for standardization.

INTEGRATED NETWORK MANAGEMENT

OSI Network Management Status

Comprehensive standards for network management, although having made much progress over the last few years, are still two years away from finalization, and fully conforming products are two years beyond that. Does this mean that users should hold off on implementing OSI networks until 1994? IDC believes the answer is absolutely not.

Because proposed OSI network management systems are not considered sufficiently robust, proprietary network management systems will continue to outperform OSI-based network management systems well into the foreseeable future. However, OSI network management standards are key in the realm of intra-network and intervendor network management exchanges. Here, OSI standards will outline rules for network management interactions, enabling coordinated network management without having to specify every last detail of proper network operation within any one segment of a network.

The most influential group involved with OSI network management is the OSI Network Management Forum. Comprised of almost every major vendor of computing and communications systems, this group's charter calls for it to oversee the interoperability of OSI-based network management systems. This task is no easy one. With the risk of losing users running high, vendors are delicately balancing control against open-mindedness. Too much of the former and vendors risk user loyalty; too much of the latter and they risk user reliance.

MIGRATION STRATEGIES

Most IS/communications managers in large U.S. organizations are interested in what OSI may offer them but they are very unclear on what those benefits are and how to achieve them. IDC survey data shows some movement toward OSI in IS plans. Generally, a conservative approach is dictated through 1990 and 1991, with a quickening pace for implementation beyond 1992.

Beyond 1995, OSI will be well on its way to dominating large corporate networks. X.400 especially has the potential to lead OSI into many large organizations. Even implemented without full OSI stack support, as it

OSI Network Management Functions	
Configuration	• Initialize and reinitialize network entities. • Collect and store information about all circuits, hardware and software systems within the network. • Distribute network information and systems and application software.
Fault	• Identify, classify and report problems. • Analyze network breakdowns. • Provide a resolution by directing operators and/or initiating intelligent automatic restorals.
Performance	• Monitor use of the network; plan for the aquisition and deployment of new equipment and services. • Tune network and application components.
Security	• Track information flow within the network nodes and applications. • Identify and pinpoint sources of misuse or abuse of network resources.
Accounting	• Provide for chargeback of network access and level of utilization. • Aid in properly managing networking budgets. • Quantify productivity associated with installed and planned network technologies.

can be, X.400 will stimulate demand for more complete lower level and comparable application-level services.

Implications for Other Networking Standards

OSI, although coordinating with a wide variety of technologies at the transmission-service level, serves as a replacement for almost every network architecture currently in use. SNA, Decnet, Data General Corp.'s Xodiac, Hewlett-Packard Co.'s Advancenet, NCR Corp.'s TowerNet and others all face the probability of replacement by corresponding functions specified within the OSI model. Obviously the key for these vendors and their users will be effectively moving their current proprietary schemes toward an open architecture.

The cynics among us would say that vendors will never do this. The past history of heel dragging relative to standards implementation supports this claim. However, as users have grown more powerful and as standards such as Unix, SQL, MS-DOS, Ethernet and Token-Ring have grown more widely used and appreciated, the dynamics of the situation have changed. In this environment, the vendors are being forced into delivering open systems platforms at the networking layer, in addition to operating systems, databases, user interfaces and programming tools.

Replacement of and Coexistence with Proprietary Networks

The greatest challenge for users implementing OSI networks during the next few years is the proper balancing of openness against cost and performance. Proprietary networks enjoy the leverage of a substantial installed base and years of enhancements. Fortunately for most computer vendors, network architectures have been mainly implemented in software with a certain amount of hardware assist where performance became a concern. This software orientation provides the user with a smooth upgrade path to the OSI model.

For example, DEC, by upgrading its proprietary Decnet Phase IV transport protocol to OSI Transport within Decnet/OSI Phase V, provides, in essence, a free migration to those users with up-to-date maintenance contracts. Once implemented, this new open DEC transport holds the potential of opening up the user's network to OSI-based NCR, DG, Bull H. N. Information Systems, Inc., Unisys Corp. and even IBM equipment.

Many alternatives will be offered to users over the next two years. Routers and gateways that act as go-betweens for OSI and proprietary networks will become prevalent as OSI backbones are implemented. Although possibly more resource intensive, a dual-stack approach, i.e., an architecture that offers both OSI and proprietary protocol usage side by side, will allow smoother migration for those more complex and diverse network configurations. A third alternative will have OSI protocols providing support for both OSI and proprietary applications and extensions. This alternative is the one that will eventually prove itself most useful for both vendors and users.

SNA/OSI Coexistence

The largest population of applications and users exists within IBM networks utilizing either Binary Synchronous Communications or SNA protocols. Therefore, the biggest potential migration toward OSI from a proprietary system exists within IBM's domain. The key to unlocking this potential from the current constraints of hardware and software dependencies is IBM's Systems Application Architecture (SAA) and its support for the OSI model. Scheduled for release this spring and summer on 370 architecture machines, IBM's SAA-based OSI suite will offer IBM users a break from traditional hierarchical IBM network offerings. Both OSI and SNA occupy the common communications portion of SAA, allowing users the freedom to choose between IBM-proprietary and open standards as a basis for new applications and end-user devices.

This increased IBM flexibility toward networking will lead to a more open IBM environment for users - one that will more easily allow the integration of other vendors' equipment and services. No matter how LU6.2 and PU2.1 have been sold over the past few years, the implementation of the OSI model within SAA represents the first solid move by IBM toward bringing peer-level communications capabilities into its strategic, mainstream product offerings.

The Move away from TCP/IP

Over the next few years, networks that utilize Transmission Control Protocol/Internet Protocol (TCP/IP) must be prepared for a transition to the more highly functional and longer term OSI solution. Useful in that preparation will be TCP/IP-OSI routers and gateways such as IP-to-OSI network exchanges; well-integrated application and networking services from both architectures, e.g. using File Transfer Protocol over OSI lower layers; and most importantly, painless upgrades from TCP/IP to OSI protocols.

STANDARDIZING THE STANDARD

Multivendor Interoperability

Conformance testing is critical to OSI acceptance. The tremendous benefits of OSI can only be achieved if OSI products

from a multitude of different vendors can plug and play for users. Over the course of the last two years, several standards promotion groups, specifically the Corporation for Open Systems in the U.S. and the Standards Promotion and Application Group in Europe, have developed test suites for seven-layer OSI testing. Through these test suites and at trade show demonstrations around the world, vendors have shown that multivendor OSI networking can be achieved. Testing and initial user experience have also shown that no two vendors implement OSI the same way. Users are advised to implement multivendor OSI networks only with caution and, for at least the next two years, with the expectation of expending significant time and effort. Over time, testing and experience will increase interoperability, but the goal of OSI plug and play is unlikely to be reached before the mid-1990s.

PRESENT AND FUTURE UTILIZATION

Current Usage

Current OSI utilization is best exemplified by the world's VANs. They represent many distinct operating transport networks utilizing one common standard, X.25. They offer applications services such as EDI and E-mail for intra- and intercompany communications internationally. This is accomplished in an environment that uses a mix of private and public communications and computing equipment as well as a multiplicity of service providers. Although far from perfect, VANs represent the current state of the art in large-scale OSI networking.

Within the private networking arena, full process manufacturing companies have shown the highest degree of OSI commitment. With their specialized research and development, automated manufacturing operations and well-integrated selling, administrative and service functions, they have the most urgent need for highly coordinated computing systems. Increasingly, the financial services industry has gravitated toward the use of standardized networks based on the OSI model. Its demands for higher performance intelligent workstations and networks, its need for smooth and timely international exchanges and its strong desire for vendor independence are combining to drive this industry down the OSI path.

The U.S. government, through its Government OSI Profile (Gosip) which is set for implementation this year, will be a big boost for OSI networks in the early '90s.

Future Directions

There will be two phases of OSI development. The first will be aimed at broadening the availability and use of the base-level OSI as a flexible and multivendor network system. Conformance testing and migration strategies are pivotal in this phase. The second phase will be aimed at strengthening OSI itself. In this phase, further enhancements to OSI applications and increasingly higher performance protocol stacks will become the driving forces.

Phase one will take place over the next three years. In 1989, we saw many OSI announcements and a few product introductions. This year will be the year in which almost every major vendor makes available its OSI stacks and applications. The years 1991 through 1993 will be dedicated to making sure the products of 1990 are actually able to work together within one common network.

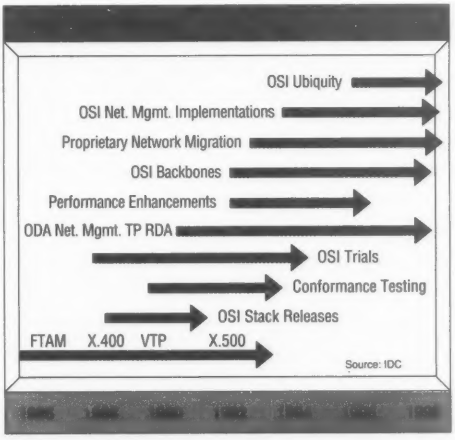
Simple OSI-based organizationwide applications such as E-mail and file transfer will become widely utilized by the end of 1993. OSI backbones, acting as coordinators for installed proprietary networks, will start to be implemented within larger organizations in this same time frame, continuing through the year 1995.

The second, more performance-oriented phase of OSI will begin in the technical/knowledge worker community - the current bastion of TCP/IP, Unix and high-powered workstations. Its requirements for intense, real-time network delivery mechanisms combined with its leading-edge networked applications will drive OSI developments starting in 1992. These phase two developments will be restricted to this select community of users until OSI proves itself a viable and workable backbone technology. Beyond 1994, performance enhancements will begin disseminating into the mainstream end-user community. At this time, demanding applications such as object-oriented databases and image processing will become the norm rather than the rarity in IS.

Time Line for Adoption

End-user organizations that abide by the "right processor for the right job" philosophy should already have firm plans in place for OSI utilization. IDC believes actual implementation for these more aggressive organizations will begin in 1991. More mainstream organizations that tend to operate rather distinct multivendor environments - NCR point of service, DEC engineering, IBM administrative, HP manufacturing - should already be planning the coordination of their networks into a unified OSI backbone. Implementation in these organizations should happen between 1993 and 1995. Further migration of these distinct networks toward OSI stacks and applications will occur between 1994 and 1996.

Organizations primarily oriented toward a single network architecture such as SNA and a minimal investment in what would be considered secondary vendors will gain little from OSI until the enhanced second phase beyond 1994. At that point, OSI networks will begin to offer significantly superior functionality when compared with traditional proprietary networks. By sticking with the older networking methods, organizations will invariably fall behind in their ability to compete on the basis of information technology.



OSI charts a steady course toward ubiquity.

The Architecture Behind the Strategy.

Open, Cooperative Computing Architecture.

NCR's Open, Cooperative Computing Architecture (OCCA) focuses on client-server relationships as the foundation for Open, Cooperative Computing.

In the client-server model, the application is split between the client and server, and data is separated from the applications. This makes maintenance of applications and data easier, and allows processing at the most effective location.

Because clients and servers are separate components that work together, servers can be located anywhere in your enterprise. The size of both clients and servers can be scaled from small to very large, so you can base decisions on organizational needs, not technical restrictions.

Compute-intensive human interface functions are performed at the client level, allowing more economical processing of workstation-level applications, and providing a more powerful human interface.

The server processes often-used and specialized applications like database management and network security, and handles compute-intensive data management and I/O intensive data retrieval and processing, providing only the information the client requests. This greatly reduces network traffic and communications costs, while improving response times.

OCCA also supports such services as exchange of electronic mail and files, and through a common set of programming interface standards, offers a universal application environment for development and run-time systems. And by supporting a uniform set of human interface services, it allows OCCA developers to provide new applications that are easier for you and your staff to learn.

Open Systems Networking.

NCR's plan for open networking is designed to give you the flexibility you need by delivering standards-based systems for all levels of your organization, and the end-to-end support and service to achieve *your* strategic plan.

To ensure our customers of multivendor connectivity and interoperability, we've developed a wide range of solutions adaptable to almost any customer need.

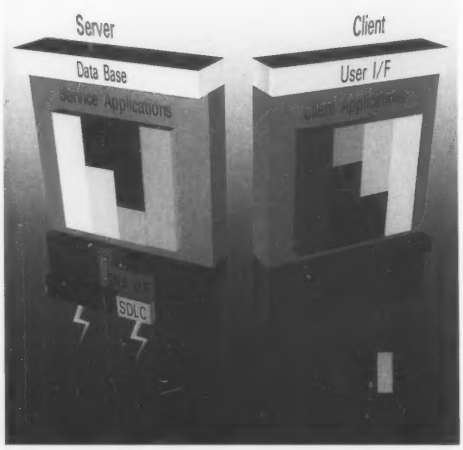
For example, NCR delivers open communications systems, network applications, and network management based on OSI standards, to help make your migration to a fully OSI-compliant network more manageable. And we provide current system flexibility with open communications standards such as X.25 and TCP/IP.

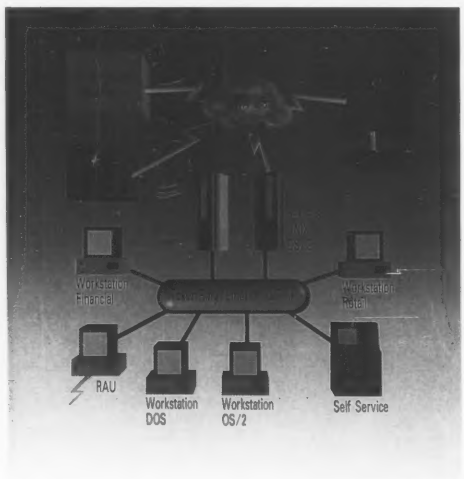
If you use SNA, NCR helps to preserve your investment through a continuing commitment to superior SNA connectivity, while simultaneously helping you integrate this proprietary standard with open systems.

We also support standard communication networks, and standard operating systems like UNIX,* OS/2* and DOS.

NCR's strategy for Open,Cooperative Computing is to give you the flexibility you need to compete, and win, in the '90s. And we support this strategy with the architecture and service necessary to offer not just systems, but solutions.

For more information on Open, Cooperative Computing, phone 1-800-CALL NCR.





NCR

Open, Cooperative Computing.
The Strategy For Managing Change.

MC-1103

DATA STREAM

Ellis Booker

Do they have what it takes?

With the entry of Ameritech and Bellsouth last month, three of the seven regional Bell holding companies have positioned themselves to offer enterprise network management solutions.

Nynex Information Solutions Group, Inc. began the year by announcing its integrated network management platform, Allink Operations Coordinator. Last month, Ameritech Information Systems made its bid for an "umbrella" management solution [CW, April 2].

Also last month, Bellsouth said it would market AT&T's Netpartner Network Management System, allowing customers of Bellsouth's two operating companies to monitor their own networks using telephone company operations systems. Tariffs for the service will be filed early next year, Bellsouth said.

The question is, do phone companies have what it takes to create the network management answers users seek? The answer isn't obvious. Let's weigh the pluses and minuses.

On the question of technical competence, it is undeniable that Nynex, Ameritech and the other five regional Bell operating companies are large, sophisticated users with years of expertise in hooking together and making networks run reliably. As users of networking gear, the regional companies and their telephone operating companies are unmatched in U.S. industry.

"But a big minus is that Bell companies have no credibility in data," says David Passmore, a partner in the network strategies consulting practice of Ernst & Young, located in Fairfax, Va.

Passmore argues that the Bell companies do have a good record in voice services, but that their track record with data products — notably central office local-area networks and virtual private networks — has been bumpy, at best.

Back on the plus side, the regionals have generally embraced open architectures, a plus for

Continued on page 74

Vendors blaze Sonet trail for desktop users

BY ELISABETH HORWITT
CW STAFF

While carriers and their equipment vendors haggle over the right way to implement the Synchronous Optical Network (Sonet) over the public network, T1 switch and local-area network vendors are working to extend the standard's high bandwidth to users' desks through their own equipment.

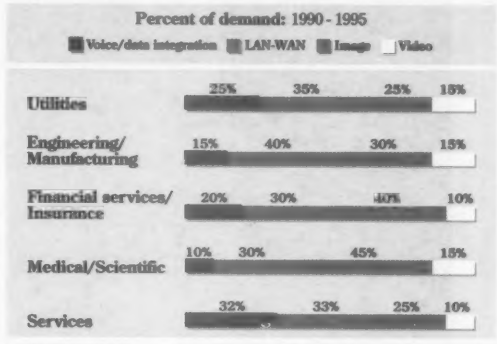
While at the recent Enterprise Broadband/Sonet Networks conference in Washington, D.C., hosted by Boston consulting firm The Yankee Group, several major T1 multiplexer vendors affirmed their commitment to developing interfaces between their equipment and the Sonet standard.

In addition, a group of Fiber Distributed Data Interface (FDDI) vendors are currently working on a standardized interface between FDDI LANs and Sonet-based services, according to Everett O. Rigsbee III, a senior network systems architect

Continued on page 73

High-speed networking priorities

Several industries cite different applications as the driving forces behind future demand for broadband protocols such as Sonet



Source: The Yankee Group

CW Chart: John York

Chevron subsidiary mixes oil, WAN

CIT eyes communications, cost and safety benefits from global network

ON SITE

BY JIM NASH
CW STAFF

When Chevron Information Technology Co. technicians first toyed with the idea of turning Chevron's tanker fleet and shoreside operations into a global wide-area network, they were pursuing more than faster communications and cost reductions.

They said they expected the network to make shipment of oil safer.

Chevron Information Technology (CIT) in San Ramon, Calif., plans to connect each of the 40 ships operated by CIT's sister subsidiary, Chevron Shipping Co., by mid-1991.

Today, most of the 40 ships have at least some of the computing or communications equipment needed for a WAN. The shipboard network will tie into new, ambitious information systems linking Chevron's land-based departments via satellite, cellular phone and land line.

Killing Chevron's albatross

The pilot project is unique in that so many of the day-to-day shipping information functions will be bundled together and shared worldwide, according to Bardin Nelson, a senior analyst at CIT.

When complete, Chevron Shipping employees on land and at sea will use IBM Personal System/2s running common applications. Until recently, Nelson said, Chevron endured the same independent, chaotic PC computing environment other corporations suffered.

"We are creating a computing environment for the shipping company with applications for everyone, including our seafarers and our shoreside clients," said Geoff Landon at Chevron Shipping. In the past, Landon said, projects were broken up along departmental or shoreside-shipboard lines.

Nelson said application sharing will not stop at word processing and spreadsheet applications. CIT programmers and analysts already have created a program called the Port and Vessel Information System, or Pavis, for land-based shipping managers.

With Pavis, Chevron can better plan chartering and shipping. The software notes a ship's capacity, availability, port location, age, support needs, accident record and ship-inspection information. If Chevron leases the ship from a third party, Pavis shows owner/operator histories. It also indicates channel depths, tidal schedules and other port information.

Robert Holmgren

Chevron's *Nelson says the project is unique because it lets land-based managers communicate with seafaring employees*

In the past, Nelson said, this information took days to compile and coordinate. Mismatching ships and ports or capacities and channel depths could result in environmental disasters.

Pavis got under way, but a problem soon appeared.

"Pavis really pushed our PCs to their limits," Nelson said. So CIT opted to build a local-area network in shipping offices to share the load.

Work on CIT's shipboard network project, called Vehicle Management System, is more finite. Nelson said he expects it to cost $4 million over its 2½-year life span.

The vessel-management project, which will give ships' officers access to Pavis and related programs, is more hardware-oriented.

CIT plans to buy 160 PS/2s for the project, with enough spare parts on board to keep a tanker running over a typical five-month cruise.

Far out at sea, officers will link via modems to the ship's communication gear, up to a satellite, down to an earth station and to the appropriate Chevron department. Cellular communications will replace satellite transmissions closer to port, and land lines will transmit data when a ship is in port.

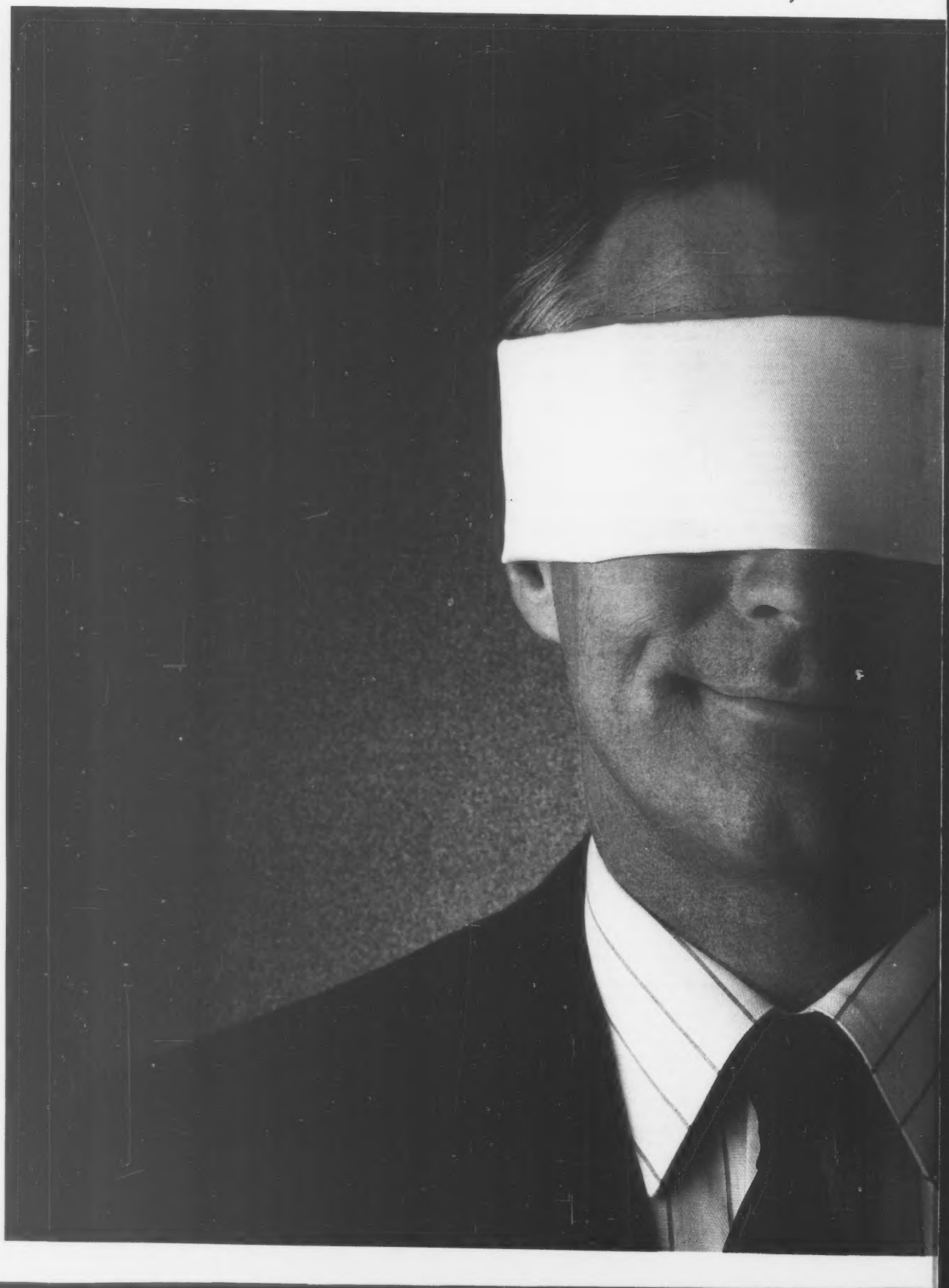
Shipboard PCs

Onboard PCs will address conventional administrative duties including payroll and precision cargo-loading formulas. However, as part of a WAN, the machines will communicate in bursts with home office personnel, giving them information ranging from port delays, actual cargo size and exact location.

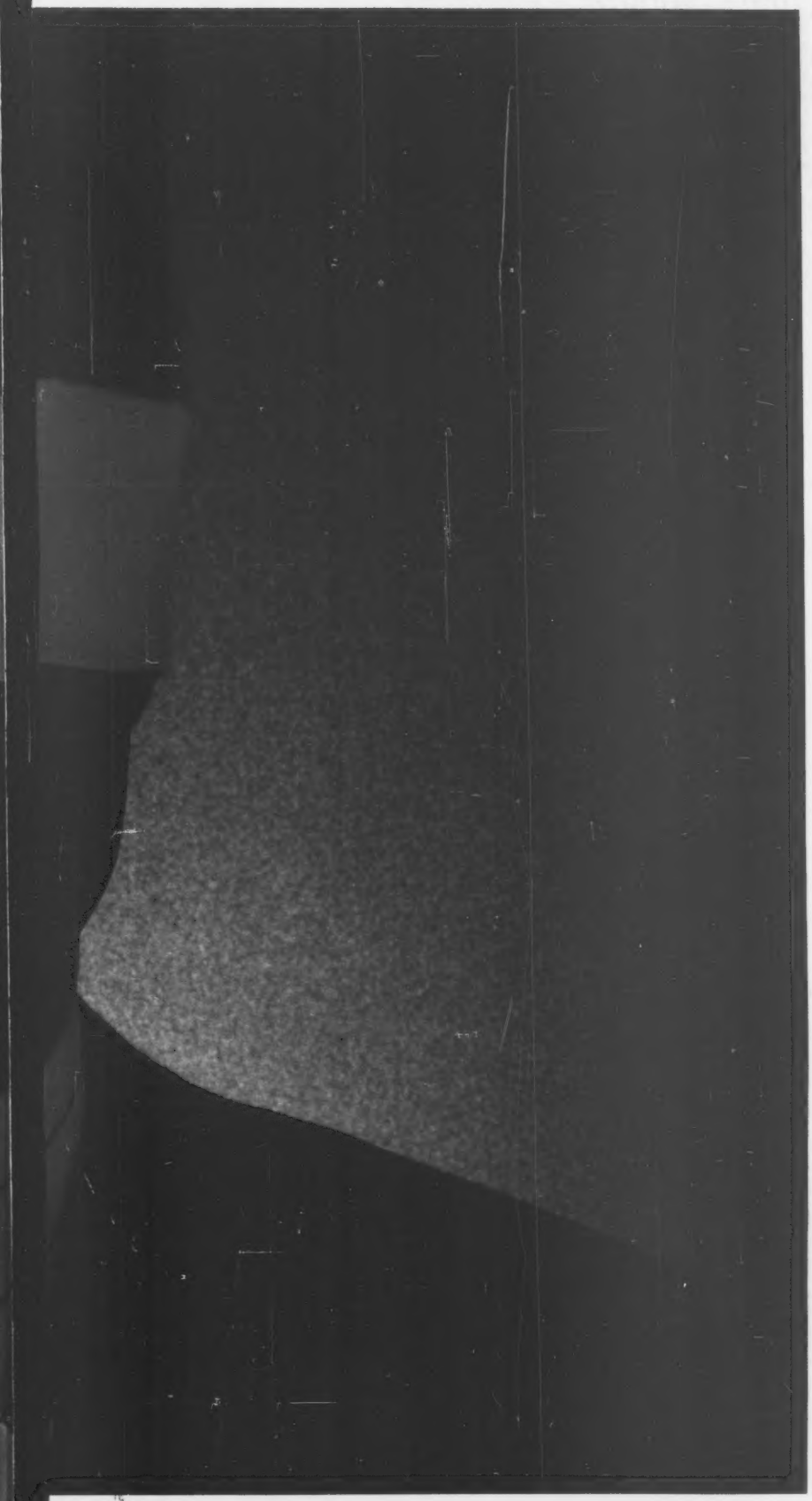
In working to create the network, Chevron Corp. has mowed down some of its own corporate policies. To start with, Nelson said, he and his 10-person crew of analysts and programmers were told to move into Chevron Shipping's headquarters in order to work more closely with users.

Chevron Corp. managers, Nelson explained, saw that the best way to get the projects running quickly was to have "programmers work hand in hand with users."

Compared to HP's NewWave Office, IBM's



OfficeVision has a few limitations.



IBM promises to simplify business computing dramatically with its new OfficeVision systems. But if you follow that vision, you may not be as prepared for the future as you think.

Hewlett-Packard has a better way.

The HP NewWave Office system. It gives you all the functionality IBM OfficeVision claims to give you. And much more.

Through our unique object-based technology, HP NewWave Office lets all of your information resources work together. And gives users a consistent interface across mainframes, minis, workstations, and PCs. It also integrates information from all your applications, regardless of the vendor. Something IBM OfficeVision can't deliver.

HP NewWave Office system integrates all your existing MS-DOS® applications. IBM OfficeVision doesn't. So, which system better protects your investment in DOS PCs and software?

HP NewWave Office gives you industry-standard networking and lets you coexist with IBM. It runs on HP3000 systems, HP's UNIX® system based computers, and the industry-standard OS/2 operating system. IBM OfficeVision runs only on IBM's proprietary OS/2 Extended Edition, OS/400, MVS, or VM. So, which system gives you more flexibility for the future?

To date, sixty companies are writing software for HP NewWave Office. According to IBM's advertising, eight are writing applications for IBM OfficeVision. So, which system gives your people a greater selection of software?

Beyond all this, HP NewWave Office system gives your users the extraordinary new "agents" capability. Like a computerized staff, "agents" can learn to handle a wide range of sophisticated computing tasks, such as compiling and distributing sales forecasts. IBM OfficeVision has nothing comparable. So, which system is actually more visionary? To find out, call **1-800-752-0900, Ext. 283G.**

There is a better way.

HEWLETT PACKARD

TCP/IP may become formal standard

BY GARY H. ANTHES
CW STAFF

A group of the nation's largest computer and communications firms are considering a proposal to move the development of Internet's TCP/IP protocols into the open for the first time.

Members of a task group accredited by the American National Standards Institute (ANSI) met in Tucson, Ariz., last week to discuss a recommendation that standards for Transmission Control Protocol/Internet Protocol (TCP/IP) and related communications protocols be brought into the ANSI standards-setting and approval process.

At present, the protocols are developed, tested and implemented privately by a task force of the user-oriented Internet Activities Board (IAB), an informal, self-appointed body of network

IAB AND ANSI officials supported the move, saying both vendors and users will benefit from the increased exposure that will be given to the standards.

experts from universities and corporations.

IAB and ANSI officials supported the move, saying both vendors and users will benefit from the increased exposure that will be given to protocols that have become de facto standards as well as the glue that holds together the burgeoning Internet. Internet is the umbrella network that encompasses more than 2,000 international, national, regional and local nets, 200,000 computer hosts and more than one million users in industry, government and universities.

A few years ago, Internet was an informally administered collection of networks used mostly by researchers in government posts and universities. Internet was built around the U.S. Defense Department's Arpanet, for which TCP/IP was developed.

There are more than 200 U.S. and foreign companies making TCP/IP-conforming products, said Vinton Cerf, chairman of the IAB and a vice-president at Reston, Va.-based Corporation for National Research Initiatives. "It's a multibillion-dollar business now, and vendors are nervous about a collection of university people — who may not care about profits — having control over the protocols," he said.

"It used to be if you wanted to change TCP/IP, some grad student would stay late one night and do it," said Lyman Chapin, chairman of ANSI's X3S3.3 standards group and a network architecture manager at Data General Corp. "Now we're talking about somebody like DEC possibly having to hold up a product worth millions of dollars."

The X3S3.3 group has 26 members, including AT&T, IBM, DG, Digital Equipment Corp., Hewlett-Packard Co. and the National Institute of Standards and Technology.

Chapin said that an emerging perception about the relationship between TCP/IP and Open Systems Interconnect (OSI) standards is boosting the importance of Internet protocols. "People used to think that TCP/IP would just go away one day. But TCP/IP will not go away; we'll have a multiprotocol environment for at least 10 years," he said. OSI is a model for data communications in multivendor networks that is intended to replace the older TCP/IP.

Far from impeding the adoption of OSI, ANSI's involvement should speed and smooth out its move into Internet, Cerf said.

Chapin acknowledged, however, that the involvement of ANSI may slow the evolution of Internet standards. "But you can't have it both ways. If you want everyone to buy in, you have to give everyone the chance to comment," he said.

Sonet

FROM PAGE 69

at Boeing Computer Services who is chairing the effort.

Boeing hopes to use Sonet-based bridges and routers to interconnect its FDDI campus networks over distance, he added: "Sonet will be the preferred digital transport for interconnects within three years; that's a BCS statement of direction."

Widespread customer premises equipment (CPE) support of Sonet would allow users to combine and centrally manage their private and carrier-based networks into a truly hybrid system that supported Sonet speeds of 100M bit/sec. or more, speakers said at the conference.

Sonet will be the first telecommunications protocol to exploit fiber-optic cable's ample bandwidth to define a wide channel for network management and control communications, said Ned Farinholt, an executive staff member at MCI Communications Corp. The existing 45M bit/sec. T3 protocols "don't have enough overhead because they were created when bandwidth was precious," he added.

Sonet's Operations Channel will potentially support true end-to-end management of users' networking facilities, Farinholt said. Users' management systems will be able to interact much more fully with carrier-based network control centers, providing users with greater monitoring and analysis of their network traffic and error levels. Also, if private network equipment vendors support the Sonet management protocols, one network control center will be able to manage both private and carrier-based network facilities.

However, the Sonet standard has to mature significantly before such capabilities become available, sources at the conference said. Both carrier-based and CPE vendors have yet to reach consensus on a full set of Sonet specifications, which would ensure that their systems interoperate, Farinholt said.

In addition, it will take some time for vendors to reach consensus on the types and definitions of messages exchanged over the Operations Channel and how much bandwidth to allocate to various types of networking systems and functions, Farinholt said: "There's a fight going on about who gets what." Continuing vendor debate on such matters has delayed completion of Phase 2 of Sonet from the original December 1989 deadline to this fall, he added.

Missing specs

Also missing from the current Sonet standard are specifications for writing applications to allow specific types of personal computers, multiplexers and front ends to access Sonet services, said Richard Scholz, director of broadband/transport at Nynex Service Corp.

Nynex and Ameritech recently initiated a project to develop such a standard, called Combus, potentially allowing small vendors and even users to hook their particular applications and equipment to the standard without having to write the whole thing from scratch, Scholz said.

"This will open up Sonet to anyone with a great idea but not necessarily millions of dollars," as well as shorten the interval before users have the products they need to implement real Sonet applications, he said. However, even if the standard gets backing from a critical mass of vendors, it will not be ready for a year or two, he added.

It will also take about two years for the FDDI-to-Sonet standard to become available, Rigsbee said. Meanwhile, Nynex and Codenoll Technology Corp. recently signed a five-year agreement to develop Sonet-compatible bridges for Codenoll's FDDI products, as well as token-ring and Ethernet LANs, the companies said recently.

In addition, Newbridge Networks, Inc., Timeplex, Inc. and Adaptive Corp. all said they expect to provide Sonet-based interfaces for their T1 multiplexers sometime during the next 1½ years.

However, the CPE side of Sonet seems to be progressing faster than the carrier side. The Yankee Group does not expect carriers to start significant deployment of Sonet-based services until around 1993.

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potential customers dedicated to this concept.

On the other hand, this commitment to open systems comes of necessity. Prevented from manufacturing hardware under the Modified Final Judgment that broke up the Bell System in 1984, the regionals have had little choice but to pick technology partners who can interface easily together. Moreover, it's unclear that the regionals' stated commitment to open systems is any more ardent than that of many other vendors.

Then there is the marketing thing. Despite technical competence, the regionals' nonregulated entities stumbled often. Who can forget that they launched their customer premises equipment (CPE) operations after a regulatory green light a few years ago — only to largely retreat from this business after discovering their marketing and cost structures couldn't deal well with this market's cutthroat margins?

In fairness, network management is for typically large, sophisticated customers, and so maybe the regionals' lack of CPE marketing experience won't be a major drawback.

On the other hand, we already have seen one failure in that arena: US West entered the network management workstation market with a bang in the spring of 1987, then gave up and sold its Netcenter product to IBM last year.

A more damaging marketing problem has been the inability of the regionals to push their de-

> THE REGIONALS have had little choice but to pick technology partners who can interface easily together.

regulated businesses beyond their regional territories; most have remained landlocked.

On the other hand, the regionals do have special insight into their local network. Indeed, one of the exciting prospects of their entry into the enterprise network management game is that they will integrate public network services such as Centrex with local-area and wide-area network facilities.

Ameritech, for example, said it has interfaced its Ameritech Network Management (ANM) product with the Ameritech Service Management System, an enhanced Centrex introduced by its regulated phone companies last November that lets customers monitor and reconfigure their Centrex services from a local workstation. The promise, at least, is that ANM could serve as a window on LAN, WAN and Centrex facilities.

It remains to be seen, however, whether Ameritech will be able to create tight integration between its ANM and the Centrex offering of a local Bell company that is not one of its own.

Finally, the regionals can probably sell their network management solutions by leveraging off existing relationships with local customers. But are they the right relationships?

Passmore insightfully points out that the Bell companies know the telecommunications side of the house but that "network management is gravitating up the chain to MIS directors." These executives, he suspects, see the Bells as "bit haulers," not network management makers, and will more likely turn to their familiar vendors — computer companies — for network management answers.

Booker is *Computerworld's* Chicago correspondent.

FCC approves plans, eases Bell restrictions

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Calling it an important step in the implementation of Open Network Architecture (ONA), the Federal Communications Commission earlier this month approved the latest ONA plans submitted by the seven regional Bell holding companies. The approval paves the way for the companies to provide enhanced services as part of their regulated telephone service.

The commission said the plans — amended versions of those submitted in 1988 — now offer fair competition to rival service providers. The FCC also said the plans have been beefed up significantly in the number of ONA services to be offered. Only minor changes, due in July, are still needed, it said.

ONA is an FCC program that requires the Baby Bells to unbundle their services in order to allow equal access to their networks for providers of enhanced voice and data services such as videotex and electronic mail.

In return for opening their networks to others, the Baby Bells had argued that they should be able to offer enhanced services of their own and that they should be able to offer them and basic telephone services through a single integrated organization. In response, the FCC earlier imposed a requirement for "structural separation," which meant that the companies had to set up separate organizations for the two kinds of services.

The commission said it would lift the requirement for structural separation for each regional company as soon as the company meets three criteria for implementation of its initial round of ONA services: It must be technically prepared to offer the services; have in effect federal tariffs, prices, terms and conditions; and have filed state tariffs.

The commission also said the regionals must file amended ONA plans by April 15, 1991 containing longer-term plans for services such as Signaling System 7, Integrated Services Digital Network and Intelligent Network.

NEW PRODUCTS

Local-area networking hardware

Tallgrass Technologies Corp. has announced that its tape backup system has been certified by Novell, Inc. for use with Netware 286 and 386.

Filesecure 1300, a 1.3G- to 2.2G-byte, 4mm digital audio tape drive, includes a fully integrated backup application. The system's software supports the Bindery, Trustee and Network Rights assigned to files as well as backup features such as data compression, the vendor said.

The list price for an external subsystem, which includes a host adapter board and Filesecure software, is $4,595.

Tallgrass
11100 W. 82nd St.
Lenexa, Kan. 66214
913-492-6002

A family of terminal servers that permits connections to host computers running Digital Equipment Corp.'s Local Area Transport (LAT) protocol and to systems running Transmission Control Protocol/Internet Protocol has been introduced by Cisco Systems, Inc.

The ASM and MSM units support up to 96 and 32 respective ports and license LAT technology directly from DEC under the terms of a program inaugurated last year.

Beginning this month, LAT protocol support is available with Cisco terminal servers. Pricing is $480 for the MSM unit and $960 for ASM units.

CSI
1525 O'Brien Drive
Menlo Park, Calif. 94025
415-326-1941

Local-area networking software

Network Resources Corp. has announced its Multigate products for users of Apple Computer, Inc.'s Appletalk networks.

The family includes the Multigate Access line of software products; Multigate Mac ($795), a software router that runs on any member of Apple's Macintosh II family; and the Multigate 2000 line of routers.

One copy of Multigate Access comes with the Multigate Mac package; additional copies cost $80 per user.

Multigate 2000 is now available in three options: AT1 ($1,195), AT2 ($1,395) and LT ($2,395). All other Multigate products are slated to begin shipping next month.

NRC
2450 Autumnvale Drive
San Jose, Calif. 95131
408-263-8100

Unison Technologies, Inc. has announced an on-line uninterruptible power supply (UPS) monitoring and data backup software package for Novell, Inc. local-area networks.

Network Monitor was designed to be used with Unison's Unipower UPS and loaded on file servers running Novell's Netware.

The product receives signals from a Unison UPS attached to the server's serial port and alerts network managers of low battery conditions or power failures, the vendor said.

The software requires Netware Version 2.11 or higher versions and 1M byte of random-access memory.

The sugggested retail price is $99.95.

Unison
23456 Madero
Mission Viejo, Calif. 92691
714-855-8700

Network management

Racal-Milgo has introduced a personal computer-based system designed for financial institutions and other organizations that transmit sensitive data.

The Datacryptor Key Management Center comprises a customized Compaq Computer Corp. 386/20e PC, a standby power system, two printers and a Datacryptor 64KC peripheral device that performs all cryptographic functions.

The system is said to support point-to-point, multidrop and dial-up applications at a maximum asynchronous speed of 19.2K bit/sec. and up to 64K bit/sec. synchronous speeds. The system costs $15,490 plus a license fee. The Datacryptor 64KC sells for $2,250 per unit.

Racal-Milgo
1601 N. Harrison Pkwy.
Sunrise, Fla. 33323
305-846-1601

Triticom has announced a software package that allows system managers to monitor application-level usage in each workstation on a Novell, Inc. Netware local-area network.

Argus lets users conduct a hardware inventory of an entire LAN and store the data in a disk file. It can run on computers equipped with IBM's PC-DOS or Microsoft Corp.'s MS-DOS 3.1 or higher. Novell's Netware IPX Version 2.1 or higher is required for LAN communications.

A basic file server license costs $245. It includes a user manual and a 3½- or 5¼-in. disk and allows up to 250 workstations to be monitored on one LAN segment.

Triticom
P.O. Box 11536
St. Paul, Minn. 55111
612-937-0772

OS/2 networking

Banyan Systems, Inc. has announced Vines for OS/2, a new version of its Virtual Networking Software network operating system that provides integrated OS/2 client support.

The system is compatible with Microsoft Corp.'s OS/2 Version 1.2 and IBM's Standard Edition and Extended Edition Version 1.2 running on OS/2 client workstations.

Some of Vines' features include a menu-driven client installation utility and dynamic link libraries to assist program developers.

The product is slated to begin shipping in the third quarter of 1990, and pricing is yet to be determined, according to the vendor.

Banyan
115 Flanders Road
Westboro, Mass. 01581
508-898-1000

Links

Amnet, Inc. has added a 32-port rack-mountable node to its Nucleus 7000 series of IBM Personal Computer/AT-based products.

Other features include support of X.25 and Systems Network Architecture/Synchronous Data Link Control and a maximum line speed of 256K bit/sec.

Pricing ranges from $8,500 to $48,000, depending on configuration.

Amnet, Inc.
1881 Worcester Road
Framingham, Mass. 01701
508-879-6306

MANAGER'S JOURNAL

EXECUTIVE TRACK

Christopher J. Egger has been named deputy assistant chief information officer for information systems development at the Internal Revenue Service.

In his new position, Egger will be responsible for providing management and technical direction for the acquisition and implementation of a redesigned tax system and for coordination of all IS development activities.

Egger began his IRS career in 1976 as a computer equipment analyst in Washington, D.C. Most recently, he served as director of the Tax Systems Division.

He holds a bachelor's degree in economics from Villanova University in Villanova, Pa., and is a native of Havre de Grace, Md.

Russel A. Arnett has been elected to the board of directors at Prestige Consultants, Inc., a consulting and software development organization.

Arnett is currently director of information services at Applied Solar Energy Corp., which develops solar cells that are used for deep space exploration and commercial satellites.

Arnett, who holds both a bachelor's and a master's degree from California Western University, was previously director of consulting for the JAD Systems and Education Division of Prestige Consultants.

Prior to that, he was director of data processing for Restaurant Enterprises Group in Irvine, Calif.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Making IS move the business

Empire's Lassila makes sales calls to take his strategic vision of IS right to customers

BY JOANIE M. WEXLER
CW STAFF

When Neal Lassila joined Empire of America Relocation Services, Inc. in 1986 as manager of technical services, the computer system was so segregated from the business of doing business that he inherited his "own personal mainframe."

Today, the 34-year-old Lassila, who was promoted last month to vice-president of MIS by the Orlando, Fla.-based company, sees information systems as such a strategic weapon that he often tags along on sales calls to explain to potential clients about the on-line services that set Empire apart from its competition.

Lassila says his *raison d'etre* at Empire is to "really embrace the business. I understand every aspect of relocation," he said.

He understands a bit about people, too. He brought a corporate incentive program to the IS department in 1988, under which employees receive bonuses of $500 to $3,000 for hitting an ahead-of-time target date with an error-free implementation of an approved project.

"This is also an incentive for the staff to grow personally," he said, "because you have to qualify for — or 'win' — larger projects."

Lassila, who said he budgeted $20,000 for incentives this year, pointed out that a similar program was in place for the rest of the company when he came on board and molding it to IS was part of the transformation of his department into a "viable" part of the organization.

"Neal has helped bring automation and communications to the forefront of our industry," said Rita Wagner, Empire's chief executive officer, adding that a large contribution Lassila has made to Empire's business has been to establish hookups to its client base with customized software packages.

He did that because "we see flexibility as our distinguishing characteristic," explained Lassila, who places Empire fifth in market share out of about 30 companies currently in the business of relocating employees of corporate clients. "For example, we offer customized reporting so clients can download information in a certain way."

Lassila's management style has

Continued on page 78

PROFILE: Neal Lassila

Walt Johnson

Position: *Vice-president of MIS, Empire of America Relocation Services, Inc.*
Mission: *Understanding every aspect of the relocation business and how information systems functions as a viable part of the organization*

Merger sparks synergistic IS relationship

BY CHARLES VON SIMSON
CW STAFF

When catalog giant Spiegel, Inc. acquired Eddie Bauer in July 1988, Jon Porter was worried that the situation was all too familiar.

Porter is the vice-president of information services at Eddie Bauer, the Redmond, Wash.-based clothing company whose corporate culture revolves around such things as paying for any employee's first outdoor experience. As an IS executive at another company that was purchased, he had encountered executives with little respect for the importance of systems, or corporate culture, ravage the department.

He was pleasantly surprised. "The acquisition has brought synergy, in the real sense of the word, to both our IS functions," Porter said. "We haven't just traded memos, we have really traded expertise."

One example is as solid as concrete. Behind Eddie Bauer's wooded corporate headquarters site, a new data center is being constructed and is scheduled to come on-line in the fall.

"I had never been involved in building a data center from the ground up," Porter said. "My counterpart at Spiegel had. His contributions have saved us from reinventing the wheel."

The relationship is a dialogue. Eddie Bauer manages approximately 120 retail outlets and installed a foundation retail point-of-sale system in 1987. When Spiegel sought to expand the technology in its outlet stores, it came to Porter and his team. "The systems requirements involved in catalog and retail distribution are entirely different," Porter said. "Where they take the lead in catalog development, we move ahead in retail systems."

Similarly, by July 1989, one year after the acquisition, Eddie Bauer had systems to support an up-and-running proprietary credit-card line. The technology expertise came from Spiegel.

The cooperation is also extending into a project to develop a joint telephone order-entry system. While the system does not yet have a formal timetable, Porter is enthusiastic about the prospects for both companies. "Once the network is in place, we can spread the cost of operation without losing any efficiency," he said. "That is what synergy is about."

> "WE HAVEN'T just traded memos, we have really traded expertise."
>
> JON PORTER
> EDDIE BAUER

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Lassila

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been described by one of his staff members as "quite liberal. He assigns a project with a due date and leaves you alone," commented Wayne Falardeau, manager of technical and client services at Empire.

Falardeau added that working for Lassila has helped him grow professionally, in that "when I came to Empire, I had been used to strict IBM environments. But Neal always explores different avenues for equipment purchases, which has broadened my horizons and opened my mind."

Lassila started in the computer business at the dawn of his academic career, earning an associate's degree in business/data processing at a community college in Pittsburgh.

He then moved on to the University of Pittsburgh, where he juggled his studies in business administration, a full-time job in the school's administrative data center and weekend employment as a hospital computer operator. He said he feels he is finally in a position where he can really make a difference in the business of his company through IS. He said that during much of his career, which included five years as manager of technical services for the Florida Hospital Service Bureau and three years as computer operations manager for conglomerate Wometco Enterprises, Inc., companies tended to place most of their emphasis on applications and view computer operations and systems programming as "necessary evils."

At Empire, however, the computer system has in many ways actually *become* the business. With about 135 employees in four offices nationwide, the company offers soup-to-nuts relocation services for over 200 corporate clients, including Burger King Corp., The Coca-Cola Co., GTE Corp., Motorola, Inc. and Westin Hotel Co.

Info at your fingertips

All information pertaining to the purchase, sale and maintenance of transferee homes resides in a Computer Associates International, Inc. Datacom database on an IBM 3083 mainframe in the Orlando data center, which allows 9.6K bit/sec. dial-up access from client locations and leased-line access by each of the company's three regional offices. The dial-up links compare with 2,400 bit/sec. speeds by most competing relocation services, according to Lassila.

"Our primary purpose is to get our clients' employees from point A to point B with a minimum loss in productivity," Lassila explained. "For the most part, that means that we buy, sell and maintain homes to free employees from worrying about their business affairs in the former city."

Lassila, who has seen Empire rebound from a $3 million loss in 1985 to a $1.6 million profit in 1989, said that much of the initial turnaround was related to cost-cutting measures in the IS department and more recently to strategic uses of computer operations. Lassila said he credits the efforts of Chief Financial Officer Brad Harrison as well as then-Chief Operating Officer Ed McMahon, with being instrumental in changing Empire's corporate view of IS.

The company had just acquired Relocation Realty Services, a division of Control Data Corp. that had been running an IBM 4341-based data center out of Detroit with 10 offices nationwide. The two executives were serious about consolidating to cut costs, and Lassila was hired to move the data center from Detroit to Orlando.

"Expenses were out of control at the time, the 4341 was operating at 2% to 5% utilization, and no one knew anything about computers," Lassila said.

He explained that while Empire's initial goal was to cut costs, the company now uses its computer system to develop powerful tools for clients, such as 24-hour access to individual transferee files and electronic mail communication between clients and Empire personnel.

> COMPANIES tended to place most of their emphasis on applications and view computer operations and systems programming as "necessary evils."

"When a person moves, there is a great deal of information that passes through many hands, such as selling price, appraisals and closing costs," Lassila explained. He added that Empire maintains about 4,000 homes in inventory each year for its corporate clients, which means that it has about 300,000 vendors — such as appraisers, landscapers and pool maintenance companies — on its pay schedule.

A major differentiating feature for Empire, Lassila noted, is that most of its competitors are part of larger organizations and must share their IS resources. "Because of the politics in MIS, it then becomes a struggle to get things done," he said. "Fortunately, Empire can devote all its resources to this service."

That status may be in jeopardy, however. Lassila explained that Empire is currently up for sale by corporate parent Empire of America Federal Savings Bank and that he hopes the new parent will be looking for a turnkey operation.

Market share in the relocations services business is limited to about 40,000 transfers per year, according to Lassila, who said that Empire will move about 4,200 people in 1990. He added that 30% of Empire's clients are currently on-line and that the remaining client base transfers employees infrequently enough that regular hard-copy reports give them timely enough access to information.

Despite his relative youth, Lassila can still reminisce about the changes he has seen take place in the industry, including the historic shift from keypunch batch processing to the on-line environment. He noted, too, that "nine or 10 years ago, I was running an IBM 370 Model 148 that cost $900,000, had 4M bytes of memory and took up an entire computer room. That model is now a desktop machine."

CALENDAR

The current status and future direction of computer automation and electronic data interchange (EDI) related to companies involved in international trade will be the topic of the ninth annual International Trade and Computerization Conference.

The conference, sponsored by The International Trade Facilitation Council (NCITD), will be held May 30-June 1 in New York. Speakers will discuss user benefits and actual experiences in applying automated techniques to facilitate international trade transactions.

Advances in the operation and implementation of electronic interfaces with government agencies such as the U.S. Customs Service, the Department of Commerce and the Bureau of the Census will be highlighted, as will strategic developments concerning the global message format EDIFACT.

For more information, contact Eugene Hemley, executive director of NCITD in New York, at (212) 925-1400.

MAY 6-12

A Shared Solution in Software Technology (Assist). Orlando, Fla., May 6-9 — Contact: Assist Headquarters, Chicago, Ill. (312) 644-6610.

Association for Systems Management (ASM) Information Systems Conference. Atlanta, May 6-9 — Contact: Terri Gibbons, ASM, Cleveland, Ohio. (216) 243-6900.

College and University Computer Users Conference. Buffalo, N.Y., May 6-9 — Contact: News Bureau, University at Buffalo, Buffalo, N.Y. (716) 636-2626.

Information Industry Association Spring Conference. San Francisco, May 6-9 — Contact: Information Industry Association, Washington, D.C. (202) 639-8262.

Digital Equipment Computer Users Society (Decus) Conference. New Orleans, May 6-11 — Contact: Decus, Marlboro, Mass. (508) 480-3659.

CASE in Financial Services. New York, May 7-8 — Contact: IBC USA Conferences, South Natick, Mass. (508) 650-4700.

Data Administration Management Association Conference. Gaithersburg, Md., May 7-8 — Contact: Debbie Detrick, Arlington, Va. (703) 841-6374.

Facilities Management for Senior Executives. Toronto, May 7-8 — Contact: Office of Management Systems, Massachusetts Institute of Technology, Cambridge, Mass. (617) 253-0595.

Data Administration in the 1990s. New York, May 7-9 — Contact: Performance Development, Princeton, N.J. (609) 921-3770.

Annual Strategies in Telecommunications Conference. Fort Lauderdale, Fla., May 7-9 — Contact: Ashley Pearce, Gartner Group, Stamford, Conn. (203) 967-6757.

The Three R's of Software Automation: Re-engineering, Repositories and Reusability. San Francisco, May 7-9 — Contact: Extended Intelligence, Chicago, Ill. (312) 346-5245.

Conference on Network Management. Durham, N.C., May 8-9 — Contact: Applied Computing Devices, Terre Haute, Ind. (812) 232-6051.

Network Management Conference. Durham, N.C., May 8-9 — Contact: Applied Computing Devices, Terre Haute, Ind. (812) 232-6051.

Dexpo South '90. New Orleans, May 8-10 — Contact: Expoconsul International, Plainsboro, N.J. (609) 987-9400.

Federal Computer Conference. Anaheim, Calif., May 8-10 — Contact: FCC, Rockville, Md. (301) 587-9344.

National Conference on Superperformance Computing in the Federal Government and Industry. Washington, D.C., May 8-10 — Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

DB2 Programming for Performance. Los Angeles, May 8-11 — Contact: L&S Computer Technology, Austin, Texas. (505) 988-3811.

Color Hard Copy Conference. Monterey, Calif., May 9-11 — Contact: BIS CAP International, Newtonville, Mass. (617) 893-9130.

Corporate EFT/EDI for the Financial Executive. Chicago, May 9-11 — Contact: Corporate EFT/EDI Conference, Oak Park, Ill. (708) 848-0135.

Electro '90. Boston, May 9-11 — Contact: Electronic Conventions Management, Los Angeles, Calif. (213) 215-3976.

Information Strategy Planning. Chicago, May 9-11 — Contact: Performance Development Corp., Princeton, N.J. (609) 921-3770.

Weighing the pros and cons of telecommuting

BY MITCH BETTS
CW STAFF

Telecommuting has not turned out to be the panacea for working parents and employers that Alvin Toffler and other futurists envisioned a decade ago. Research has shown that work-at-home arrangements can lead to social isolation, low-wage piecework and career plateauing.

However, the research literature also shows that telecommuting can be a satisfying and productive experience for certain types of work and certain types of workers, according to an analytical paper by Douglas T. Hall at Boston University's School of Management.

"A careful selection process is required to assure a good fit between the employee and a position requiring home work," according to Hall's report, published in the annual review of the Institute for Information Studies in Queenstown, Md.

Probably the most important character traits of the successful telecommuting individual are a high need for autonomy and a low need for social interaction. "This person could thrive in the isolation of the home setting, the absence of interruptions from co-workers and the freedom to work at his or her own pace," Hall said. In a comment relevant to the information systems field, he noted that people with a technical career (as opposed to managerial) would probably also prefer home work because they would rather work with "ideas or data or things" than with people.

Work that is technical and independent of other operations is generally a good candidate for telecommuting, especially if the worker has enough motivation to perform well with minimal direct supervision, Hall reported.

On the other hand, low-level work such as data entry that is conducted full-time at home, with piece-rate compensation, "is a recipe for frustration and exploitation," the researcher concluded. The classic example is that of the working mother who does clerical work at home and finds it extremely stressful to work and care for preschool children at the same time.

Hall said that the ideal situation is a combination of telecommuting and office work. Substituting some office hours with work at home has been identified by one researcher as perhaps the "perfect workplace."

BOOK REVIEW

Computer viruses, and books about them, continue to proliferate

With all of the bad publicity surrounding computer viruses, it is probably not surprising that books about the subject have become as plentiful as the viruses themselves. Here is a look at four books that have been published in recent months.

COMPUTER VIRUS HANDBOOK
Edited by Harold Highland
Elsevier Advanced Technology, $153

Computer Virus Handbook is one of the most comprehensive books on viruses and includes contributions by many of the top virus watchers. Unlike some of the other virus books available, Highland's point of view is that viruses can be alarming but should not cause an information systems manager to panic.

The chances of infection by a computer virus are small when compared with the probability of computer fraud, accidental data errors and other risks, he notes.

The book is stuffed with information on the history of viruses, the many strains currently on the loose and how to combat them. Also included is an evaluation of 20 antivirus software packages. The book is pricey but worth it if you are an IS manager or computer security specialist — the book's target audience.

COMPUTER VIRUSES: DEALING WITH ELECTRONIC VANDALISM AND PROGRAMMED THREATS
By Eugene Spafford, Kathleen Heaphy and David Ferbrache
Adapso, $30

Adapso, the computer software and service industry association, has recently published a slim (110-page), no-nonsense volume titled *Computer Viruses.* This is a how-to book for IS professionals on identifying, preventing and, if necessary, cleaning up after virus attacks.

Many books covering viruses these days focus exclusively on rogue programs designed to attack IBM and compatible personal computers. This is one of few books that look at the viruses that attack Apple Computer, Inc. Macintoshes.

It also contains a useful chapter on the legal issues resulting from virus attacks.

VIRUS! THE SECRET WORLD OF COMPUTER INVADERS THAT BREED AND DESTROY
By Allan Lundell
Contemporary Books, $9.95

Virus! evidently aims to capitalize on the virus phenomenon by sensationalizing the problem. The book's first chapter and its appendix, for example, are devoted to the infamous Internet episode, which involved a worm rather than a virus. A virus is a computer code that is capable of replicating itself but cannot run unaided. It must first insert itself into a program and runs when the program is executed. A worm is also self-replicating but is a distinct program that runs unaided.

It may be possible to forgive the media for routinely confusing viruses, worms and other sorts of malicious code, but it is inexcusable for an author who purports to have some expertise on the topic to do so. The book contains information derived from cyberpunk science fiction that is sometimes just short of gibberish, but it also contains interesting information about the history of viruses and attempts to get at the motivation of virus authors, unlike most books on this topic.

COMPUTER VIRUSES, WORMS, DATA DIDDLERS, KILLER PROGRAMS, AND OTHER THREATS TO YOUR SYSTEM
By John McAfee and Colin Hayes
St. Martin's Press, $16.95

A nifty book on malicious computer code, *Computer Viruses* is packed with well-written information on viruses, how they work and how to defend against different sorts of attacks. Considerable space is also given over to explanations of how different strains of viruses work and how to exploit technical design weaknesses in many viruses to combat them.

The problem is that the book promises more than it delivers. The authors devote most of their efforts to writing about viruses but do not analyze other computer system threats to that degree.

McAfee heads a company that publishes an antivirus software package, one that is reviewed favorably in the book. This fact is not concealed from the reader, by the way, but probably explains why the authors sometimes tend to sensationalize the virus problem. Finally, like many other books on viruses these days, this one also attempts to capitalize on the Internet incident by devoting considerable space to the subject, but it adds nothing that has not been reported elsewhere.

MIKE ALEXANDER

Alexander is *Computerworld's* senior editor, advanced technology.

TAKING CHARGE

Les Gilliam

Outsourcing issues

Why would a company relinquish control of its information systems resources to an outside firm? Conversely, if outsourcing offers so many advantages, why doesn't everyone do it?

The term outsourcing has come into vogue and is used to describe the acquisition of certain services or products in support of IS needs. Most often, it refers to the complete turnover of the computer services function to an outside firm specializing in that business.

The terms facilities management and service bureau processing have been in use for years to describe such arrangements. In the case of the facilities management contract, the outside firm takes over the management of the company's computer facility on-site. The processing may subsequently be moved to one of the supplier's own data centers as economics or other factors dictate.

With the service bureau processing arrangement, the customer maintains control of the services, but all processing is done at a remote data center owned and operated by the service bureau company. Facilities management and service bureau processing services are often supplied by the same company.

The primary factor regarding outsourcing is control. Who owns and operates the hardware is not as important as who provides and controls application development. In other words, do the analysts and programmers become employees of the facilities management supplier or do they remain employees of the firm? Who controls the processing priorities and service quality?

Since so many companies seem to be engaged in outsourcing, there must be some good reasons for such an arrangement. Most likely, an investigation would reveal a soft spot in the firm's IS management, corporate management or both.

In many cases IS management lacks the skill, resources or management support to serve to the users. Complaints mount, and senior management is pressured to make changes.

If senior management is uncomfortable with the responsibility and decision-making for information technology, outsourcing often looks like an attractive alternative. It seems easier to pay someone else to take away all those worries and let senior management spend its time running the business.

No doubt there are cases in which the facilities management firm has the expertise, both management and technical, to provide improved services.

Facilities management certainly relieves the customer of personnel issues and can probably offer good career opportunities to information technology specialists. But what about costs? Is it cheaper to hand the IS function to an outside firm, one which must pay the same or similar expenses as before, and also add a profit? It depends.

Every case must be evaluated on its own, hopefully with an inclusion of all the costs for both alternatives. The facilities management firm, in many cases, can offer economies of scale and specialized resources to justify the change. However, if senior management strongly desires to shed itself of the day-to-day IS problems, economic justification may not be the deciding factor.

Most companies that would consider outsourcing will most certainly evaluate the facilities management company, taking into account its history, reputation, track record with existing customers and financial condition. However, the chief determinants for success are the contract and the local facilities manager.

IT TAKES commitment and time to develop an efficient and effective relationship.

A contract that is unclear as to costs and services to be rendered can quickly lead to unrealistic expectations and constant friction between the facilities management representatives and the customer, but the on-site facilities manager, if skilled and perceptive, can make or break the relationship. If both sides want success with the facilities management arrangement, the on-site manager is the key to negotiations and relationships that lead to mutual trust and respect — necessary ingredients.

What keeps the facilities management arrangement from working? One of the most critical obstacles is the liaison arrangement between facilities management and the customer.

Take the case of the company in which the IS manager was not doing a very good job, so the firm opted for outsourcing. Not surprisingly, the manager was opposed to the facilities management arrangement. Guess who was named as liaison between the company and the facilities management firm? That's right, the former IS manager. Did he want the facilities management supplier to be successful? Of course not. So he was a constant source of friction.

Lastly, senior management must not consider outsourcing to be a short-term solution. It takes commitment and time to develop an efficient and effective relationship. And reverting to an in-house IS department will be very difficult.

Gilliam is president of Gilliam Associates, a computer management consulting firm based in Ponca City, Okla.

DISASTER PROTECTION

Insurers will rescue only what you protect

BY IAN CHEESEMAN

Mike Gallert, security administrator at Schneider National, Inc., was not expecting a quiz when he applied for business continuation insurance, let alone a makeup assignment.

At the time, Schneider, the country's leading full-load trucking company, had only a bare-bones backup plan in place. Its insurance company issued coverage only after it was assured that an extensive and detailed strategy was being prepared.

"I had to complete a comprehensive business analysis, including all our business units and users, not just a plan for maintaining a data processing service," Gallert says.

What Gallert experienced was the first tremor of a growing trend. Insurers are starting to ask hard questions before covering business losses. The answers they expect probe beneath surface preparations for disaster and cover levels of detail and coordination that are far beyond what companies have come to expect.

There are three basic types of disaster recovery insurance: property; data and personnel; and business continuation insurance, which covers profits lost from a prolonged outage.

Almost all companies can qualify for the first and second types, which cover such items as the cost of a backup site and temporary replacement equipment.

It is business continuation insurance — sometimes called business interruption or recovery insurance — that is not so easy to come by. First of all, not many insurance firms offer this type of insurance; second, a prerequisite is a comprehensive disaster recovery plan that the carrier finds acceptable.

At companies the size of IBM and American Express Co., coverage is even more difficult to get. At many large firms, the earnings are higher than any insurance company could cover. However, they can get coverage for individual departments.

Acceptable levels of planning vary with the company. For example, a stand-alone manufacturer can afford to recover more slowly than a bank or service organization, which relies on real-time transaction processing.

While information systems has always been responsible for securing the data center against disaster, it must now formalize and expand these plans to meet insurance carrier requirements. In addition, it must coordinate with other departments to make sure not only the machines but the entire business will be up and running within a reasonable amount of time.

"We are looking for a commitment on the part of the insured to take all the necessary measures to ensure that his business is continued," says Tom Cornwell, an assistant vice-president at the Chubb Group of Companies, a leading provider of business interruption insurance. If Chubb does not find such a commitment, he says, it usually will not provide the insurance.

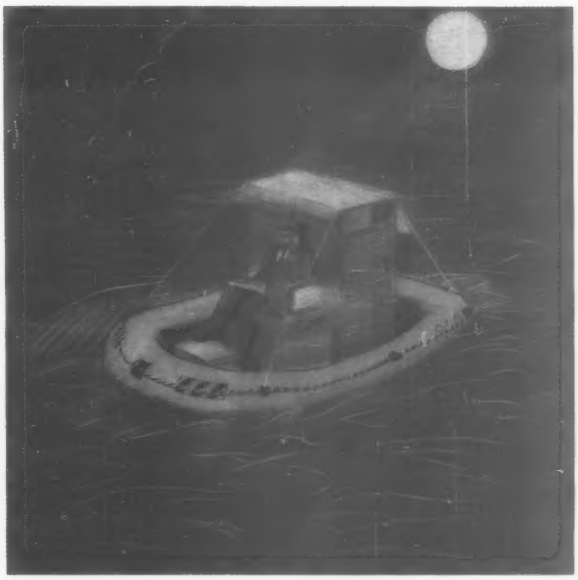
"If they have a blase attitude and say, 'It can't happen to me,' they are not the kind of person we would want to insure," Cornwell says. "Too many folks say they want to have a disaster recovery plan, but they aren't willing to spend the time or the money to effect that plan."

The idea that companies need to bulk up their disaster recovery efforts is reinforced by Kenneth Brill, president of Computersite Engineering in Danvers, Mass., which specializes in disaster protection. His work has uncovered some surprising oversights in U.S. corporations.

"In some installations, the supports for equipment have never been extended," Brill says. "When the earthquake hit northern California last October, the only thing that stopped some processors from sliding through the wall of the computer room was the cabling."

To discern the lackadaisical from the truly concerned, insurance carriers look for signs of commitment ranging from the more ambiguous, such as management concern, to the practical, such as written disaster recovery plans and testing procedures. The question is, how do you come up with a disaster recovery plan that will satisfy your carrier?

"We look for a quality DP operation with a sound fire protection system and provisions for emergency power generation, duplication of critical data and alternative telecommunications



Ken Stampnick

Cheeseman is a free-lance writer based in East Line, Conn.

Insurers

FROM PREVIOUS PAGE

networks," Cornwell says.

While insurance underwriters ultimately decide whether a computer site or company qualifies for insurance, their decision is strongly influenced by the recommendation of an engineer sent by the carrier to examine the physical site and the existing disaster plan.

"When we see that the client has a well-constructed plan that looks at all aspects of his business and the risks involved, then we will give our highest recommendation to our underwriters," says Ray Padron, director of the field operations section at the engineering department of Aetna Life and Casualty, one of the U.S.' largest insurance companies. Such a recommendation marks the company as a "highly desirable account."

Sites that do not have a disaster recovery or business continuation plan, Padron says, are unlikely to get approval for anything but absolutely basic coverage on buildings and equipment.

Padron, a 20-year veteran, checks a site for a working and tested fire protection system, training for the people who use it, computer room configuration, an uninterruptible power supply (UPS) and its ability to support the air-conditioning system until an orderly shutdown is accomplished, reciprocal agreements with other data centers or commercial hot sites, data backup and security arrangements and system redundancy. Fire, he says, is a main concern.

Padron also looks for more sophisticated measures, such as flow sensors linked to the fire alarm system, to ensure that power is cut before water from the sprinklers hits equipment.

Flow sensors can mean the difference between saving a mainframe or peripheral and having to write it off, according to Ken Greenough, chief scientist at BMS Catastrophe, Inc. "Removing water deposits from flooded computers and restoring them to working order can cost 15% to 25% of the replacement cost of that equipment," he says.

Other aspects of predisaster preparation that can influence an insurance company's decision to provide coverage, Greenough says, are buying or renting dehumidifiers and portable air-conditioning units, consulting a restoration company before the event and connecting the alarm system via a modem to the data center's manager and his deputy's home.

While engineers look for testing procedures, Padron says, they neither participate in actual testing nor study results. Rather, they see its existence as evidence of a commitment to disaster recovery.

Lions, tigers and bears

Awareness of potential hazards is not only recommended; insurance firms expect it. Chubb suggests that the following be considered when forming a business continuation plan:

- ✓ **Fire**
- ✓ **Flood or water-main break**
- ✓ **Toxic or hazardous chemical spill**
- ✓ **Transportation accidents:**
  - Aircraft or railroad incident
  - Bridge, tunnel or roadway problem
  - Barge or ship incident
- ✓ **Utility outages:**
  - Electrical power
  - Gas leak
  - Communications
  - Process steam or water
- ✓ **Explosion**
- ✓ **Weather incidents:**
  - Hurricane, tornado or high winds
  - Snow and ice storms
- ✓ **Labor disputes:**
  - Strike
  - Riot or civil commotion
  - Bomb threat

A critical assessment of end-user departments is the key to good planning, says Howard Kearns, director of service marketing for Unisys Corp.'s Information Services Group, which has a strategic alliance with Advanced Information Management, Inc. in Woodbridge, Va.

The group provides consulting services in corporate business resumption, security and disaster recovery. It is not sufficient to simply plan for replacing end-user equipment and software, Kearns says. Many other factors must be taken into account, such as communications, alternate locations, separate data storage and key personnel replacement. To formulate his plan, Schneider's Gallert chose to use personal computer-based software.

Areas under scrutiny at Schneider included equipment, personnel, supplies and backup items such as UPS. In addition, a separate project was launched to study data backup and off-site storage requirements for individual applications in use at the company.

Gallert used Disaster Master from Recovery Management, Inc. in Littleton, Mass., to help get things going. With a network that supports more than 1,500 users and 25 remote IBM sites, all controlled from a central IBM mainframe, he had a complex job ahead.

By using the software, Gallert found it simpler to make changes during plan development. "I can make changes to the plan more easily because it's a database package," he says.

The steps a user moves through with the software are applicable to any disaster recovery planning procedure. Gallert first completed a comprehensive business analysis, which, although time-consuming, was also essential.

"We spent the first three to four months of our planning process gathering this data," Gallert says.

The next priority for anyone undertaking this kind of effort is to establish procedures for handling various emergencies such as a flood, fire or communications outage. This should be followed by drawing up the notification process, which describes how to contact the people needed to handle the crisis.

Once that task is completed, a command center must be established in a safe location. Damage assessment is the fifth step, followed by coordinating recovery using the team structure established in the plan.

Not down for the count

PC-based software also helped develop a plan at Heritage Trust Credit Federal in Charleston, S.C., which is insured through the Credit Union National Association. CUNA requires disaster plans to be in place before it provides coverage.

When Hurricane Hugo hit Friday, Sept. 22, 1989, and knocked out power for nine days, the credit union was able to open its doors to deal with cash transactions by the following Tuesday.

The software — Recovery Pac from Computer Security Consultants, Inc. in Ridgefield, Conn. — provided "a flexible series of options that allowed us to work our way through problems that had not been anticipated in the original plan," says Jim McDaniel, vice-president in charge of management information systems.

According to Computer Security Consultants, the software is activated when the disaster — or test — occurs. With the software, you can track the crisis and choose the best method of handling it.

However, the software cannot complete the job alone. As in many companies, internal auditors provide the extra element at Heritage Trust to ensure that the planning and testing of a business continuation strategy is effective. "Our internal auditor and our third-party auditing firm were both involved with the

plan," McDaniel says.

Especially when considering business continuation insurance, IS executives should sit down with other senior company members at the planning table. "You should only buy extra-expense insurance when you have sat down with your controllers and accountants and accurately costed the disaster plan," says Bob Edgar, assistant vice-president at Chubb.

Other sources to tap for plan development are non-IS staff members who have a good knowledge of the company's business. These employees are in a good position to judge whether the recovery strategy can handle all the demands that may be placed on it. They can assess the level of data backup required or the level of service that remote users can adequately survive on until full service is restored, separate truly vital functions from those that may require less priority and act as arbiters between non-IS departments.

Very complex or large companies, such as American Express, may centralize control of disaster preparation and recovery planning by designating one person, the corporate risk manager, to assess risk, inspect and audit recovery plans and deal with underwriters.

Many of these companies take a three-pronged approach — IS working in tandem with the corporate risk department and internal auditors.

That is the setup at Aetna's corporate information technology services department. By working with the corporate risk department, Michael Moore, manager of IS security, gains access to engineering support, the latest developments in insurance advances and a companywide view of business continuation requirements.

Moore gets another perspective from the internal audit department: "They are a good third party to look at the plan. In some instances, their backgrounds are financial- as well as systems-oriented, and they can have interesting insights into the way we do things."

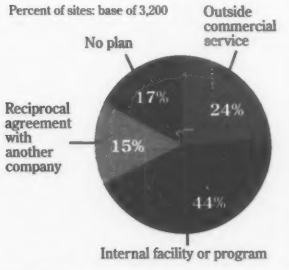
From this three-pronged approach, Moore can ensure that all aspects of the plan come under close scrutiny.

In the end, the client with a well-developed plan wins in two ways. Not only does he get coverage, but the money spent on disaster prevention may come back to him in the form of a reduced insurance premium.

"A lot of times," says Richard Arnold, director of the Disaster Recovery Institute and editor of the *Disaster Recovery* journal, "the premiums you save can pay at least the part of the cost of items like a hot site." •

Inside, outside

When asked what their backup plan was, about one-quarter of IBM mainframe sites said they used outside services



Source: Computer Intelligence, Inc. CW Chart: Doreen Dahle

ASK THE VENDOR

We use the Total Recovery Planning System from Chi/Cor for developing our disaster recovery plans independently in the field. Each of the divisions in our company has its own database. Can you suggest a way for me to combine these databases into a central core database for administration and review?

Larry Kalmis
Vice-President of Bankwide Contingency Planning
Chemical Bank
New York, N.Y.

CHI/COR INFORMATION MANAGEMENT, INC.: Total Recovery Planning System is written with a relational database, and all information resides solely in the database. To create a central database, a report can be written using the report menu selection to "export" divisional information to a central database.

Because we are a financial institution, network uptime is critical to our firm. How can the Panamax Netmax surge protector help us isolate our network from damage, even during disasters?

David E. Magnuson
Assistant Vice-President
Bank of Elmhurst
Elmhurst, Ill.

PANAMAX: Netmax protects both the AC and data communications lines. If disaster strikes, it will stop any problems occurring at the workstation level from spreading to the data line and damaging other equipment on the network. It will also turn itself off in case of a catastrophic surge and take the connected equipment off-line.

INTERVIEW

Expect the unexpected

Gene Ice of Robert Bosch shares experiences he gained from a brush with Hurricane Hugo. He suggests that companies keep their recovery plans simple, flexible and concentrated on the critical aspects of the business

At Robert Bosch Corp. in Charleston, N.C., it was the lessons that were learned from one disaster that prepared it for a worse one.

The May 8, 1988, central office fire at Illinois Bell in Hinsdale, Ill., was a blessing in disguise for the automotive OEM group of Bosch, an international supplier of automotive equipment, communications technology, consumer products and production equipment. While the fire did no direct damage to the group's own business, it interrupted shipments for divisions located closer to the fire. More importantly, it gave the group an idea of what could happen if it continued operating without a disaster recovery plan.

An important component of the plan was the North Carolina group's just-in-time shipping system, which depends on receiving and fulfilling orders on-line. Downtime could bring business to a halt.

By the time Hurricane Hugo hit on September 22, 1989, the group was ready to jump into action with a disaster recovery plan that had them fully restored in four days.

Computerworld researcher Jodie Naze spoke recently with Gene Ice, data processing manager at the division, about how the plan worked, how it didn't and the things for which you just can't plan. Ice has been in information systems for 28 years and at Bosch for five.

What sort of damage did you suffer during Hurricane Hugo, and when did you declare it a disaster?
We actually started planning for the disaster the Monday before Hugo struck. It was then that we arranged to send our backup tapes to the hot site for off-site storage.

By Thursday, with the rain and high winds, the water got into the air vents in the machine room. Later that day, enough water accumulated in the ceiling that it came crashing down onto the CPU.

When I came in Friday morning, there was still water running into the room. It was obvious that everything was wiped out. By around noontime, I realized there was no other choice but to declare a disaster.

The thing that was tough for me was that it just wasn't working the way I had envisioned. I pictured maybe a computer room fire, with me and my boss and the vice-president standing in the parking lot and declaring a disaster. Instead, I had to make the decision myself.

What would have happened to your business if no plan had been in place?
It would have taken us out. If we were to shut down the production line for the auto manufacturing, we'd lose our credibility. It would have been terrible, a total disaster for everybody.

How long did it take to get everyone up and running?
By Saturday evening we had everyone up except the connections in Ladson, S.C., and West Germany. I'd say we were 100% by midnight on Monday.

What does your plan consist of?
We have a contract with Hotsite in Cary, N.C., which covers us in Charleston and several other divisions throughout Illinois and North Carolina.

We also have a 40-page written plan, which we tested at the hot site three times prior to the hurricane. Rather than being a recipe for disaster recovery, our plan includes some objectives and a scope for the recovery plan that I wrote.

We also set up teams to cover different functions during the actual disaster. The plan lists who is on which team and what the main responsibilities are. Some of the main ones are computer operations, data entry, applications support, data support, data communications, end-user computer recovery, data recovery, hot-site operations and temporary site restoration.

You were one of the few companies in the area that had a hot site in place when Hugo hit. What made you decide that the hot site was necessary?
If you are running critical applications like just-in-time shipments, you have to have a hot site. There is no way we could not have one.

How well would you say your recovery plan functioned?
It wasn't perfect by any means. It just was not set up to cover a disaster of this magnitude. There were no telephones, no electricity, no computers, no airport.

At the same time, a plan that was that comprehensive would be nine volumes long, and who's got the staff to maintain something like that? We did achieve our main objective — to keep our customers supplied with merchandise.

Did anything unexpected happen?
Quite a few things, actually. Because we wanted our data to be as current as possible before sending the backup tapes to the hot site, we kept the on-line system up until about 10 a.m. Thursday morning before making backup copies. I sent one of my systems programmers to Atlanta with one copy of the data, planning to call him when and if we needed the data sent to the hot site.

As it turned out, it was a very lucky thing that we did that because the hurricane wiped out the airport [in North Carolina]. If we hadn't sent the data out of town, we would never have been able to get it to the hot site.

Another thing was, a lot of people happened to be carrying beepers, and it turned out to be our only way to communicate. These are now built into our plan.

Cellular phones in company cars also turned out to be a big asset. We used these to call our Anderson, S.C. plant and headquarters and keep the rest of the company informed with what was going on. Nobody else was bringing in information; even the TV stations were shut down. So executive management was kept informed of the status of the plant by mobile telephone.

Another fortunate thing was that the hot site had a private airplane, which came in very, very handy. We used it to bring the data back to our airport on Monday because you couldn't fly into the airport with regular-size planes.

Since the hurricane, have you made any modifications to the plan?
No real drastic changes. We did add some lines that bypass the PBX, because the PBX unit got wiped out. Some of the small things really count, though; for instance, I make sure there's a roll of plastic in the computer room to cover the computers.

We've also written some more finely tuned instructions for the hot-site staff as far as loading the operating system.

Do you feel you'll be ready for future disasters?
Once you go through a disaster with a particular plan, you make some mistakes, and you learn a lot. It's scary, but you come out saying, 'I can handle it.'

What were the biggest lessons you learned from this disaster?
The best advice I can give about implementing a disaster-recovery plan is to keep it simple and flexible. Don't try to cover every possible aspect, because there is no way that you are going to do it. And if you do manage to do this and put together one that covers everything, it will be so complicated that nobody will be able to follow the thing.

The thing to do is to look at what is most critical to your operation. For us, it was just-in-time shipping. •

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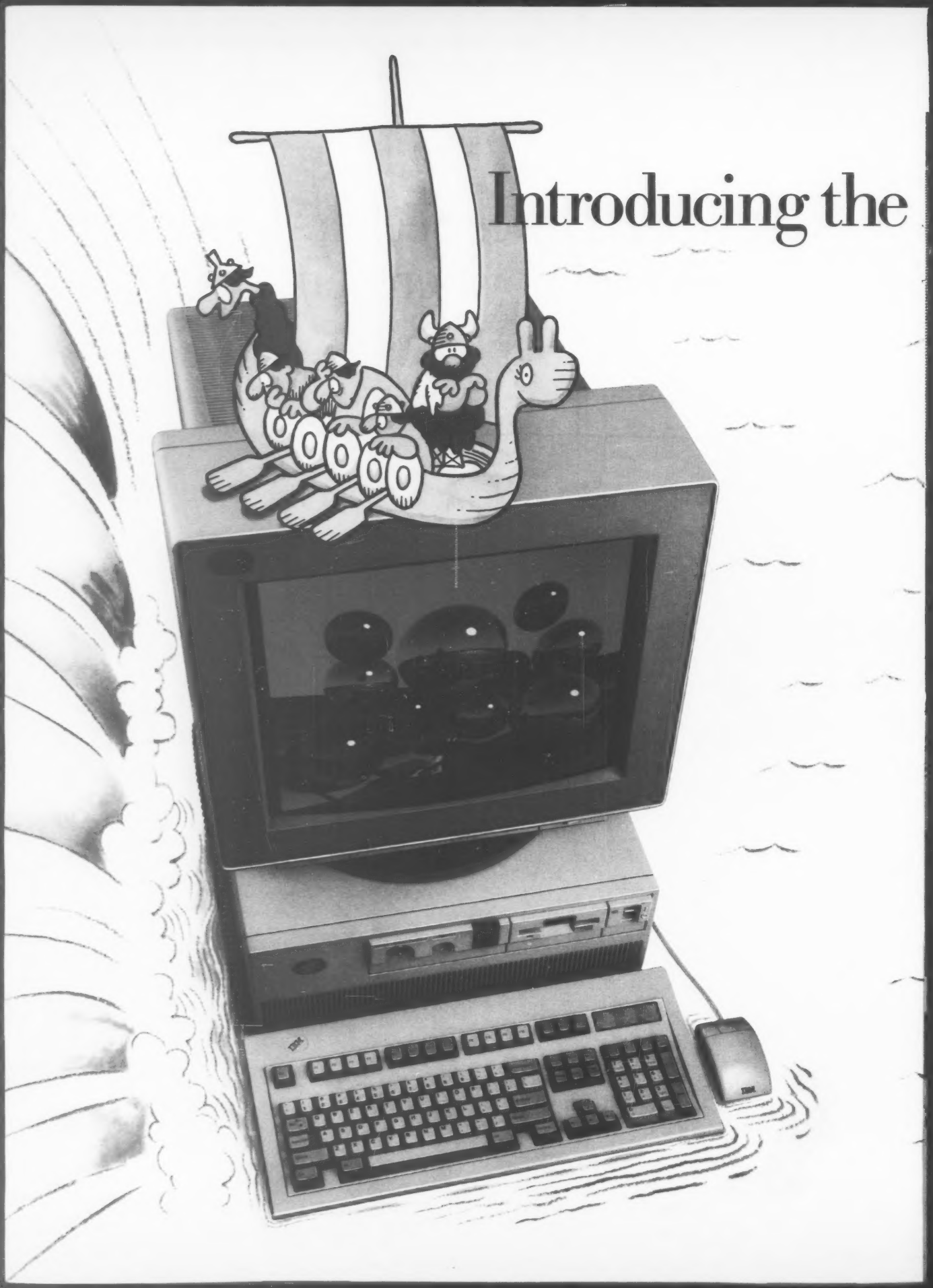
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DECstation™ 3100‡	1.6	14.3	10.1
SPARCstation™ 1‡	1.4	12.5	8.4

†MFLOPS are the results of the double-precision, all FORTRAN Linpack test 100 x 100 array suite. The Dhrystone Version 1.1 test results are used to compute RISC System/6000 integer MIPS values where 1,757 Dhrystones/second is 1 MIPS (VAX 11/780). SPECmark is a geometric mean of ten benchmark tests.

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Hot sites turn up the heat on America

BY JANET MASON

In light of IBM's entrance into the market, hot-site providers are moving a diversified mix of special services to the front burner.

While IBM's stamp of approval may encourage more hot-site subscriptions, it also threatens other providers' market shares, according to Tari Schreider, president of Contingency Research, Inc. in Jericho, N.Y.

"Essentially, IBM has an entree into the board of directors," Schreider says. "When the CEO goes in to sign for a new AS/400, they'll also offer him disaster recovery services."

Hot-site providers have experience on their side, but IBM is capable of catching up, Schreider says. "They can call IBM a Johnny-come-lately now, but by the end of the year, IBM will be as sophisticated — if not more — in its hot-site offerings," he says.

To keep their hold on the market, hot-site providers are trying to offer the "total disaster recovery solution," from mobile data centers to copies of popular operating systems.

While some observers say this is exactly what customers are looking for, they also prescribe a small dose of caution. Hot sites may not provide the best individual offerings on the market, and customers may buy into more than they actually need.

Users themselves are split between finding these services useful and taking more of a do-it-yourself approach.

Hot-site storage of hard-copy and microfiche records is one service that Kathy Fiske, a data processing manager at Kaiser Permanente Federal Credit Union in Pasadena, Calif., says is purely a matter of survival.

The credit union, which stores microfiche copies of recent financial history records at NPA Systems, Inc., finds it more efficient to have all of the data at one site.

"If we didn't have this information, we'd probably go out of business 48 months after a disaster," Fiske says.

Storage-on-request is also gaining popularity. Rather than subscribe for a set amount of storage, users can order it on an as-needed basis.

"We have an agreement with Comdisco that they will bring in the DASD within 48 hours," says Gerald E. Mitchell, director of data security at IDS Financial Services, Inc. in Minneapolis. Through the agreement, he says, he avoids paying a higher subscription fee "for the memory limitations of the hot site."

"IF WE DIDN'T have this information, we'd probably go out of business 48 months after a disaster."

KATHY FISKE
KAISER PERMANENTE

As more industries get involved in on-line transaction processing — including insurance companies, airlines, retail operations and some manufacturing companies — they are turning to hot sites for on-line backup, says Steve Josselyn, program manager of user services at International Data Corp. in Framingham, Mass.

One approach to on-line backup is electronic vaulting, in which on-line applications at the client's site — such as a bank's on-line check processing — are stored simultaneously at the alternate processing site. There are exclusive electronic vaulting vendors, but hot sites cut out this middleman by providing the service themselves.

However, there is a high price. Electronic vaulting costs can run as much as one to two times that of the hot site itself, Schreider says. While firms with a crucial need for on-line backup may justify the cost, others simply cannot.

American National Bank of Chicago is one firm that opted to subscribe to electronic vaulting services at Comdisco, Inc. Its sister institution, First National Bank of Chicago, on the other hand, chose to create its own electronic vaulting system.

Continued on next page

Mason is a free-lance writer based in Philadelphia.

Continued from previous page

In this case, says Bill Baker, disaster recovery coordinator at First National, the decision was based not on the price of electronic vaulting services but on their capabilities. Once the volume of transactions gets too high, electronic vaulting performance degrades. While American National has one critical application to support, First National has three and is planning 30.

When a company has more than one data center — or the resources to build another one — it can provide its own electronic vaulting service. Josselyn says the do-it-yourself approach is a popular one for other forms of backup as well.

For example, while many hot sites offer the "off-site office," a location at or near the hot site in which employees can continue working with all the accoutrements of their business, some users build their own remote offices.

"Since everyone is used to coming to this site, we decided to set up a temporary office and use a multiplexer" to access the mainframe at the hot site, says Fred Graham, data processing manager at Zero Corp., a Burbank, Calif., sheet metal company whose hot site is NPA Systems.

Other users are simply not interested. A place for desks, chairs, phones and so forth is a "nice idea," according to Carl Jackson, manager of business continuation services at the Los Angeles branch of KPMG Peat Marwick, but it is last on the list for disaster recovery services.

"Companies are a lot more vulnerable to lost data than to lost work time," says Jackson, who is also on the board of directors at the Information Systems Security Association, a national security council.

If you don't want to move your operations to another location, hot sites can also offer to set up a prefabricated remote data center on the client's property or bring a mobile one to the site.

The path clients most often take is to combine their own resources with the hot sites' services.

At First National, Baker uses dial-backup modems at the seven bank branches to access data at the Sungard Data Systems, Inc. hot site. Should the bank's main telephone switch go down, data center staff can bypass it and connect the systems with modems. The systems could then be used by loan officers and other line employees.

Personal computer-based disaster recovery software is another popular hot-site offering.

One example is Comdisco's Compas relational database. "The system allows me to develop a plan and publish it from the PC to hand out to employees," says Charles Sciortino, system vice-president of data center services at the Long Island, N.Y., branch of the National Westminster Bank. Compas can also be used to manage the disaster recovery project during or after the disaster. It costs $10,000.

As the temperature rises in the competitive hot-site market, Schreider says, many smaller hot sites may get burnt by either being bought or merging with another firm. He adds that there are three constants that will always sell a customer on a hot site: reputation, customer references and customer perception. ●

ASK THE VENDOR

We are using Exide Electronics' Powerware Plus 5 UPS. How do we get the appropriate amount of backup battery time needed for systems protection?

Don Rose
Technical Advisor
Federal Express
Memphis, Tenn.

EXIDE ELECTRONICS CORP: With today's electronic load, it is wise to consider that battery backup time on a uninterruptible power supply is a function of watts, not voltage. Computer loads and other off-line switching power supply loads typically demand plenty of voltage and little watts.

There is a general rule to ensure that you purchase the level of power protection you need without buying more battery backup than is necessary.

Multiply the voltage required by your systems by two-thirds. This will give you the approximate number of watts your systems actually use and will determine how much battery you will need. For example, if your systems require 3.5kVA (which is 3,500VA), multiply 3,500 by two-thirds. This equals 2,333 watts.

For the Powerware Plus 5 Model 5 with a standard internal battery, this means 10 to 11 minutes of backup time for this level of wattage. This should provide ample time for you to ride through the most common power outage and is sufficient time to allow you to bring your system down safely. The Powerware Plus 5 will audibly and visually let you know when your backup battery time is running low.

If you find you require more battery backup time, simply add a Powerware Plus 5 field-installable battery cabinet.

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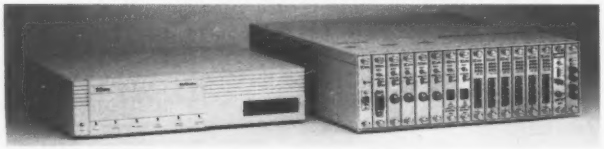

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Everyday tools turn heroic

BY JON WILLIAM TOIGO

Apply an existing implement to a new purpose, and sometimes you'll discover something revolutionary. Witness silicon and computing. The same can be said for channel extenders in a disaster recovery framework.

Channel extenders re-create mainframe multiplexer channels, allowing peripherals at remote locations to operate as if channel-attached to the mainframe. They are commonly used to overcome the maximum 200- to 400-foot distance that channel-attached devices can be placed from an IBM mainframe host.

On a day-to-day basis, channel extenders are used to move peripherals, such as tape drives and laser printers, out of the raised-floor area of the data center and into user work areas. The dust that these peripherals generate can disable disk drives and other equipment. Getting them out of the data center is one way to reduce the risk of data corruption.

Another common application springs from downsizing and data center consolidation. With channel extension, users can be attached to one mainframe at a consolidated data center with no noticeable drop in terminal or peripheral performance.

Disaster recovery planners and providers have latched onto the technology recently because of improvements in the performance and operating distances of channel extenders as well as dropping costs of digital communications facilities. They are using it to bring down the price of electronic vaulting and speed up the process of network recovery.

Electronic vaulting has long been thought of as a viable means of backing up data in real time. With this strategy, the data center mainframe and one at a remote storage center are linked. As the client creates or edits data, copies of these files are automatically sent to the remote data vault so that an up-to-the-minute system backup exists at all times.

One problem with electronic vaulting is its expense (see story page 89). Because multiplexers are used, there are also performance problems from propagation delays over long distances.

By using extension hardware rather than high-end T1 multiplexers, channel extension significantly lowers the operating costs of establishing and maintaining backup with electronic vaulting. One extender unit is connected to the mainframe channel, and another is remotely located with targeted storage devices (See chart).

This technology also lends a hand in network recovery. The traditional approach, responsible for 20 years of remarkable disaster recovery successes, has been dial backup.

Those who use dial backup in disaster recovery can list its drawbacks by rote. Communication speeds are low, and equipment performance at user locations, usually distant from the recovered mainframe, is [illegible]ly poor because of faulty lines and [illegible]gation delays. Channel extenders used with high-bandwidth communications facilities, such as T1 and T3, can connect devices to a backup mainframe at a remote site, resolving most or all of the inefficiencies of dial backup.

There are three types of channel extenders — fiber optic, wide area and channel/emulation.

Fiber-optic extenders allow a comparatively limited two- to nine-mile range. IBM and Data Switch Corp. are two providers of this type. Wide-area extenders from vendors such as Network Systems Corp. can extend peripherals up to 300 miles before propagation delays set in. Channel/device emulators from AT&T/Paradyne can connect devices virtually any distance from the mainframe and provide near-normal device and channel performance. Prices range from $60,000 to $186,000 per unit.

Hot-site providers have also picked up on channel extension. Hotsite, a division of Compusource International Corp., uses the technology in its remote item-processing backup, which features dual IBM 3890 MICR check reader/sorters. These may be connected to another host via channel extension.

If a bank experiences an interruption at an item-processing center, Hotsite's financial item-processing services may be used to recover it.

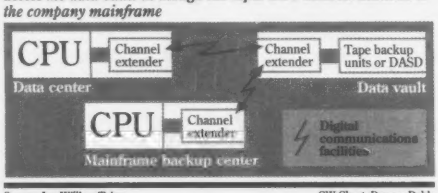
Vendors such as Comdisco Disaster Recovery Services, Inc. are using channel extension to market "MIPS" rather than sites to clients.

In this strategy, the hot site guarantees a certain amount of backup, which can reside at one of many locations. With channel extension, Comdisco says, the stricken company can be linked to any of its hot sites and still receive near-normal

Continued on next page

Electronic vaulting with channel extension

Without channel extension, electronic vaulting applications would require a high-end T1 multiplexer. The channel extender can access the data vault as though the tapes were channel-attached to the company mainframe



Source: Jon William Toigo CW Chart: Doreen Dahle

Toigo is a free-lance writer in Clearwater, Fla., and the author of several books on disaster recovery.

Make sure you can still communicate

BY MICHAEL HURWICZ

Communications are often the make-or-break factor in a business. Even if headquarters is reduced to rubble, a company can stay in operation if it is always open for data.

At its most basic, providing for communications continuity means having a plan for rerouting communications to a remote processing center, such as a hot site.

One strategy is to contract with a local former Bell operating company (BOC) for automatic rerouting services. The phone company will lay another line either to the central office or an alternate processing site. These services, which are transparent to the user, are available from all the BOCs, and charges — including construction costs and physical laying of lines — range from $4,500 to $250,000, depending on the distance covered.

Many large firms are willing to pay for this alternate wiring service so that they can continue communications after experiencing problems from backhoe damage or any other incident that results in a single point of failure at their site.

First Federal Savings & Loan in Charleston, S.C., for example, turned to Southern Bell to have its communications rerouted from headquarters to a hot site in Little Rock, Ark.

Reconfiguration time — from the moment Southern Bell is alerted to the moment that alternate circuits are usable — is about 30 to 45 minutes, according to Ralston Wylly, vice-president of data processing at the firm. Response time would undergo severe degradation, increasing roughly 20% to 50%. Wylly attributes this to the new configuration's use of switched rather than dedicated circuits.

The BOCs are aggressively positioning themselves to offer disaster recovery services, although federal regulations to date prohibit them from entering the market as an actual provider.

Instead, many offer rerouting services and emergency backup private-branch exchanges. Several have formed strategic alliances with hot and cold sites. In this way, they can offer their communications services in tandem with data processing recovery.

In Cincinnati, Choicecare, a health maintenance organization, is taking advantage of such an arrangement. The company subscribes to a cold site in Cincinnati for $4,600 per year, and Cincinnati Bell, Inc.'s communications hot site for $12,000 per year.

The company also maintains a contract with a hot site in Seattle at an annual cost of $27,000. The extra expense is worth it, according to Dave Rimer, manager of computer operations and technical support, because for disasters of a long duration, he would want processing to occur locally.

Rather than rerouting, some users subscribe to two or three different long-distance carriers. The major flaw in this strategy is that natural disasters will most

Continued on next page

Hurwicz is president of the MTI Group, a communications consulting firm in Eastsound, Wash.

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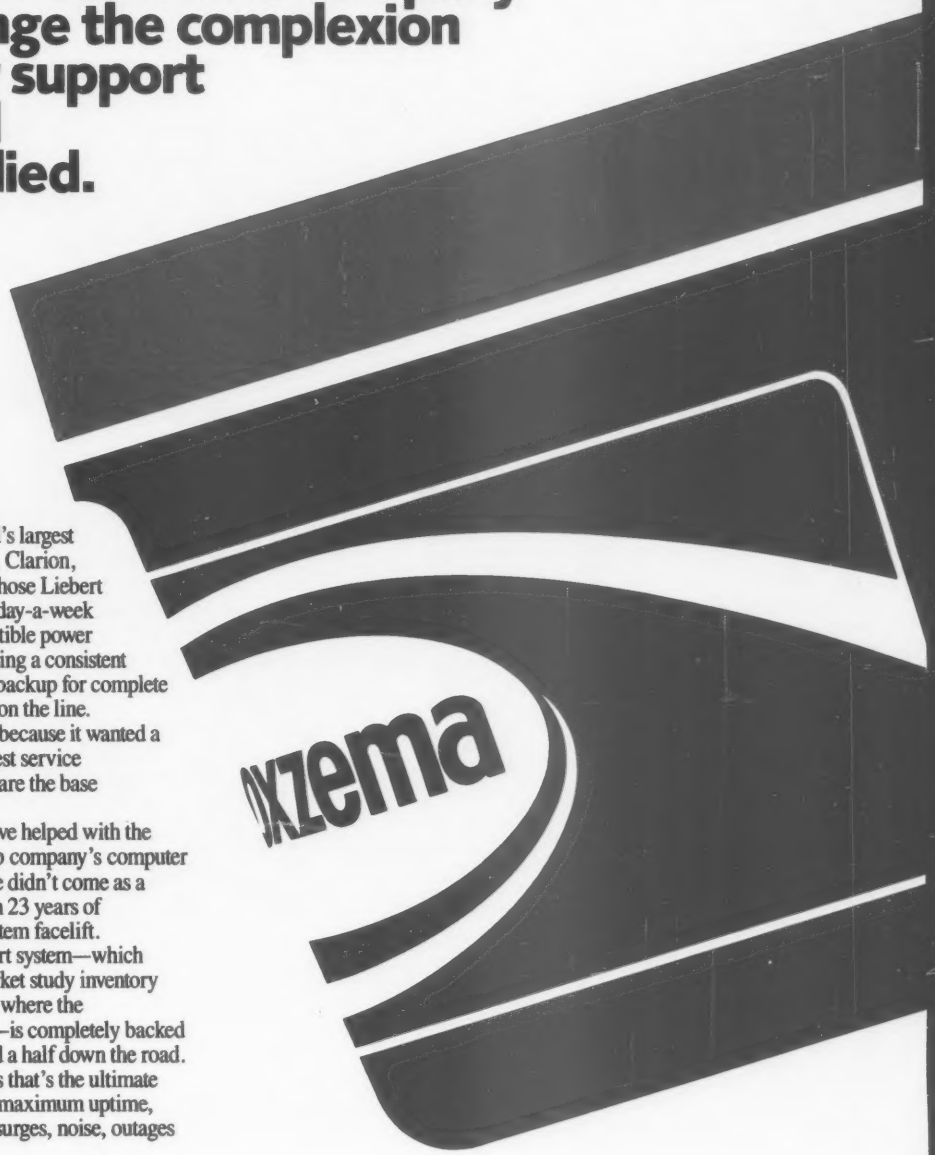
When the Noxell cosmetics company decided to change the complexion of its computer support system, several companies applied.



Liebert was the most attractive.

It's really no surprise that one of the world's largest cosmetics companies—maker of Cover Girl, Clarion, Noxzema and Raintree beauty care lines—chose Liebert systems to power its round-the-clock, seven-day-a-week computer center. They needed an uninterruptible power supply (UPS) to perform unattended, providing a consistent flow of computer-grade power with battery-backup for complete protection where it's needed and expected—on the line.

Or that Noxell Corporation chose Liebert because it wanted a system that's reliable and backed by the largest service organization in the industry. After all, those are the base ingredients in the Liebert formula.

The fact that the Liebert sales representative helped with the original site study to make sure the make-up company's computer system foundation was as flawless as possible didn't come as a surprise either. Nor that a MIS manager with 23 years of experience would choose Liebert at each system facelift.

What is a surprise is that the Noxell/Liebert system—which processes every invoice, shipping order, market study inventory and on-line production report in an industry where the competition could turn ugly at any moment—is completely backed up by another Liebert system, just a mile and a half down the road.

At Noxell, Liebert backs up itself. Perhaps that's the ultimate definition of uninterruptible power supply...maximum uptime, clean, consistent power free of spikes, sags, surges, noise, outages or irregularities.

"Liebert works here (at the main center) with no trouble. So why not have it at the backup site?"

— Frank Martin, Manager/Data Processing
Noxell Corporation, Hunt Valley, MD

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Continued from previous page
device performance.

Many users view "MIPS, not sites" as an acknowledgment of the reality of regional disasters. If several companies were to declare a disaster with the same hot-site vendor, chances are high that the facility to which they subscribe will already be occupied. Channel extension makes emergency relocations possible without impairing user recovery.

On the other hand, some users rebel against being relocated. First Union National Bank had just finished hooking up a T1 line to its anticipated Comdisco hot site in Atlanta when the bank got notice of the new plan.

"Comdisco called us one day and said, 'We're going to Dallas. Do you want to get your equipment [that was stored on-site] or do you want us to move it for you?' " says George Mattingly, vice-president and director of telecommunications at the bank. "We looked at the costs and decided we could back up ourselves better and at less cost than with Comdisco."

First Union opted to back itself up internally. It is expanding its data centers in Jacksonville, Fla., and Charlotte, N.C., for this purpose, and it is doing so with channel extension, using Pixnet-XL channel extenders from AT&T/Paradyne.

The price of channel extension may preclude its acquisition by all companies. However, if operational requirements make a case for it, the side benefits for disaster recovery planning will be, pardon the pun, extensive. •

Communicate

FROM PREVIOUS PAGE

likely effect either none or all of the carriers, especially in areas where transmission lines are in close proximity.

The real problem occurs when the end office of the local carrier fails. Another more common scenario is when a user's transmission wires are struck during digging or a blackout. In these instances, the user is completely cut off from the local public-switched network and all long-distance carriers.

One strategy is to bypass the end office with either a privately owned circuit or with circuits routed through a different central office.

You can construct private circuits with either microwave or fiber-optic technology. Microwave equipment ranges from $25,000 for a short-haul setup and $120,000 for long haul. This does not include the cost of consulting, Federal Communications Commission licensing and site preparation.

Another possibility is to install circuits to two different central offices. If one central office goes down, traffic is rerouted to the other. Historically, telephone companies have charged high fees, sometimes as high as half a million dollars, for such installations, says Leo Wrobel, president of Premiere Network Services, Inc., a cold-site provider in Dallas.

Wrobel intimates, however, that some carriers may lower their prices for this service, realizing that it protects their market share by removing an incentive for companies to pursue bypass options.

Another alternative is to find a long-distance carrier that is not dependent on terrestrial links. The Texas Employment Commission, for example, is using Qwest, a long-distance carrier whose network is based primarily on digital radio and microwave through its cold-site provider, Premiere Network Services.

First Federal's Wylly *takes the re-routing option*

If the Commission had to move to the cold site, Southwestern Bell would reroute the private lines into Qwest's Austin, Texas, facility, at which thousands of lines are connected to the cold site in Dallas. This lets the Commission get up and running in two days, says Harold Henderson, director of data processing.

Setting up a private long-distance network via satellite may seem like an extreme measure, but some large companies may find it a reasonable one.

Hewlett-Packard Co. is currently considering private satellite transmission for data and voice on its corporate networks, according to Bill Taylor, manager of telecommunications at HP's corporate headquarters in Palo Alto, Calif.

Taylor, who is in charge of company-wide networks, says HP already has satellite earth stations set up for video transmission. These remained functional during the San Francisco earthquake, Taylor says, although the company often did not have the power to run them.

There are ways to get around the cost of satellite, fiber-optic and microwave equipment. Rather than lease, you can simply reserve equipment. At hardware providers such as Lyman Brothers in Salt Lake City, users can rent or lease transportable satellite equipment. The firm will also contract with clients to provide equipment in case of an emergency. •

UPS — 15 kVA and higher

VENDOR	kVA RANGE FOR WHOLE PRODUCT LINE	PRODUCT NAME	INPUT VOLTAGE/TOLERANCE	OUTPUT VOLTAGE/TOLERANCE	FREQUENCY (Hz)	ONE- OR THREE-PHASE INPUT/OUTPUT	POWER RATING FOR PRODUCT SPECIFIED (kVA)	TOTAL HARMONIC DISTORTION OF SINE WAVE OUTPUT (%)	BUILT IN BATTERY	BATTERY TYPE	BATTERY LIFE (YEARS)	RUNTIME: FULL LOAD/HALF LOAD (MINUTES)	DIMENSIONS (H x W x D) (INCHES)	WEIGHT (LBS)	NOISE LEVEL (DB)	AUDIBLE ALARMS	BASE PRICE
Atlas Energy Systems, Inc. (714) 663-0900	5kVA-30kVA	UPSbl II 650	208, 230V AC/ ±10%	208, 230V AC/ ±1%	50, 60	Both/Both	15kVA	3%	No	Sealed lead-acid	10	User-specified	48 x 40 x 30	800	58	Loss of input power, low-level battery, overload	$17,000
	10kVA-1,000kVA	UPS II 6000 Series	208, 230, 480V AC/ ± 20%	208, 230, 480V AC/ ± 1%	50, 60	Three/Both	75 kVA	3%	No	Sealed lead-acid	10-20	User-specified	65 x 75 x 30	3,600	75, 65 optional	Loss of input power, low-level battery, overload	$62,000
Best Power Technology, Inc. (800) 356-5794	350VA-15kVA	Ferrups	220, 230, 240V AC/NP	220/68.2, 230/65.2, 240/62.5V AC/NP	50	One/One	15kVA	5%	No	Sealed lead-calcium, sealed-gel	3	User-specified	42 x 23 x 30	730	57	Loss of input power, low-level battery, overload	$12,650
Clary Corp. (818) 287-6111	400VA-37.5kVA	Clary 10/15kVA	120/208V AC/ +10%, -20%	120/208V AC/+10%, -20%	60	Three/ Three	15kVA	5%	No	Sealed lead-acid, sealed lead-calcium	10	User-specified	72 x 66 x 32	1,800	63	Loss of input power, low-level battery, overload	$25,582
	400VA-37.5kVA	Clary 22.5/ 30/37.5kVA	120/208V AC/+10%, -20%	120/208V AC/+10%, -20%	60	Three/ Three	22.5kVA	5%	No	Sealed lead-acid, sealed lead-calcium	10	User-specified	72 x 66 x 32	2,400	NP	Loss of input power, low-level battery, overload	$28,890
Computer Power, Inc. (800)526-5088, (201)638-8000	750VA-16.6kVA	Computer-Save Mark II	120V AC/+10%, -15%	120V AC/+10%, -15%	60	One/One	16.6kVA	5%	Yes	Sealed lead-calcium	8	10/20	62 x 42 x 19	1,276	49	Low-level battery	$14,713
	15kVA-50kVA	Computer-Save Mark III	120/208V AC/+10%, -15%	120/208V AC/+10%, -15%	60	Three/ Three	50kVA	6%	Yes	Sealed lead-calcium	8	10/20	72x42x19	1,658	64	Low-level battery	$31,348
Controlled Power Co. (800) 531-4782	2kVA-24kVA	Series 1000A	208, 240V AC/+10, -15%	120, 208, 240V AC/ ±3%	60	One/One	15kVA	5%	Yes	Sealed lead-acid	7	10/25	50 x 33 x 34	2,000	45	Loss of input power, low-level battery, overload	$13,950
Cyberex, Inc. (216) 946-1783	3kVA-150kVA	QP+	208, 240, 480V AC/+10%, -20%	120/208, 120/240, 277/480V AC/ ±1%	50, 60	Both/Both	150kVA	5%	No	Sealed lead-acid, sealed lead-calcium	10	User-specified	48 x 30 x 77	3,920	65	Low-level battery, overload	$65,000
Data General Corp. (800) 343-4843	350VA-120kVA	Uninterruptible power supply	208/240/480V AC/+13%, -20%	208/240/480V AC/ ±3%	60	Three/Both	15kVA	3%	Yes	Sealed lead-calcium	10	6/18	38 x 44 x 26	1,500	60	Loss of input power, low-level battery, overload, inverter not ready, overheating, transfer to bypass	$36,000
Deltec (619) 291-4211	10kVA-56kVA	8000/9000 Series	120/208V AC/+10%, -20%	120/208V AC/ ±2%	60	Three/ Three	25kVA	5%	No	Sealed lead-calcium	5-10	User-specified	45 x 24 x 32	810	57	Loss of input power, low-level battery, overload	$29,520
Digital Equipment Corp. (Contact local sales office)	20kVA-80kVA	HA 3000	208, 480V AC/+10%, -15%	208, 480V AC/NP	60	Three/Both	20kVA, 80kVA	4%	No	Sealed lead-acid	5	User-specified	55 x 18.75 x 32.25, 55 x 45 x 32.25	2,324, 4,170	60	Loss of input power, low-level battery, overload	$37,000, $75,500 (including batteries)
Emerson Computer Power (714) 545-5581	10kVA-125kVA	AP300 Series	208, 480, 600V AC/+10%, -15%	120/208, 277/480, 346/600V AC/ ±1%	60	Three/ Three	30kVA	5%	Yes	Sealed lead-acid	10	10-30/20-60	72 x 36 x 28	1,300	65	Loss of input power, low-level battery, overload	$32,000
EPE Technologies, Inc. (714) 587-1636	100kVA-3,600kVA	System 4000	208, 480, 600V AC/+1%,-10%	208, 480, 600V AC/ ±1%	50, 60	Three/ Three	100kVA-125kVA	5%	No	Sealed lead-acid	10-20	User-specified	75 x 63 x 34	5,000-12,000	73-80	Loss of input power, low-level battery, overload	$50,000-$60,000,
	10kVA-80kVA	EPS-2000	208, 480, 600V AC/+10%, -15%	208, 480V AC/ ±1%	50, 60	Three/ Three	20kVA	4%	No	Sealed lead-acid	10	User-specified	55 x 31.5 x 32	1,000-2,000	60	Loss of input power, low-level battery, overload	$15,000
Exide Electronics (800) 554-3448	10kVA-375kVA	Powerware Series	208, 240, 208/120, 308/220-415/240, 380-415, 400, 480, 600V AC/+13%, -20%, +10%, -15% (50Hz)	208, 208/120, 308/220, 400/230, 415/240, 308/220, 400/230, 460, 480V AC/ ± 2%	50, 60	Three/ Three	50kVA	5%	No	Sealed lead-acid	10-15	User-specified	45 x 34 x 32	1,920	60-75	Loss of input power, low-level battery, overload	$24,300-30,000
	412kVA-3,000kVA	Series 3000 Model 3600	480V, AC/+10%, -15%	480/277, AC/ ±1%	60	Three/ Three	750kVA	5%	No	Sealed lead-acid	10-20	User-specified	82 x 157.25 x 40.5	13,050	75	Loss of input power, low-level battery, overload	$95,000
General Power Corp. (800) 854-3460	10kVA-320kVA	V-Series, S-Series	208, 220, 380, 400, 415, 480V AC/+10, -15%	120/208, 277/480, 127/220, 220/380, 230/400, 240/415V AC/ ± 1 -2%	50, 60	Three/ Three	10kVA, 320kVA	3%	Yes, sidecar attachment	Sealed lead-calcium	5-20	10/25	62 x 22.25 x 31.5, 70.5 x 27.25 x 31.5	800-1,780	55-60	AC input fail, AC bypass fail, low-level battery, overheating, overload	$28,000-$70,000
HDR Power Systems, Inc. (614) 771-5500	1kVA-125kVA	Series 3100	120/208V AC/ ±10%	120/208V AC/ ±3%	60	Three/ Three	30kVA	5%	Yes	Sealed lead-acid, sealed lead-calcium, sealed-gel	5-10	15/23	87 x 58 x 33.5	4,450	60	Loss of input power, low-level battery, overload, UPS on bypass	$27,995
	1kVA-125kVA	G1400	120, 120/208, 120/240V AC/ ± 10%	120, 120/208, 120/240V AC/ ±3%	60	One/One	15kVA	5%	Yes	Sealed lead-acid, sealed lead-calcium, sealed-gel	5-10	20/30	62 x 26 x 30	1,795	55	Loss of input power, low-level battery, overload, UPS fault	$17,470

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

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VENDOR	kVA RANGE FOR WHOLE PRODUCT LINE	PRODUCT NAME	INPUT VOLTAGE/TOLERANCE	OUTPUT VOLTAGE/TOLERANCE	FREQUENCY (Hz)	ONE- OR THREE-PHASE INPUT/OUTPUT	POWER RATING FOR PRODUCT SPECIFIED (kVA)	TOTAL HARMONIC DISTORTION OF SINE WAVE OUTPUT (%)	BUILT IN BATTERY	BATTERY TYPE	BATTERY LIFE (YEARS)	RUNTIME: FULL LOAD/HALF LOAD (MINUTES)	DIMENSIONS (H x W x D) (INCHES)	WEIGHT (LBS)	NOISE LEVEL (DB)	AUDIBLE ALARMS	BASE PRICE
Hiross Corp. (301) 782-5525	5kVA-30kVA	HD Series	208/480V AC/±10%	120V AC/±3%	60	Three/One	15kVA	5%	No	Sealed lead-calcium	10	User-specified	68 x 46 x 30	1,700	65	Loss of input power, low-level battery, overload	$24,550
	5kVA-30kVA	HD Series	208/480V AC/±10%	120V AC/±3%	60	Three/One	20kVA	5%	No	Sealed lead-calcium	10	User-specified	68 x 46 x 30	2,100	65	Loss of input power, low-level battery, overload	$29,070
Instrumentation & Control Systems, Inc. (708) 543-6200	2kVA-20kVA	Electro-Pac	208, 240, 480V AC/±2%	120, 240, 120/240V AC/±0.5%	50, 60	Three/One	20kVA	5%	No	Any	10-20	User-specified	75 x 72 x 30	3,500	70	Loss of input power	$23,000
	2kVA-20kVA	Electro-Pac	208, 240, 480V AC/±2%	120, 240, 120/240V AC/±0.5%	50, 60	Three/One	15kVA	5%	No	Sealed lead-acid, sealed lead-calcium	10-20	User-specified	75 x 66 x 30	2,900	70	Loss of input power	$19,000
International Power Machines (800) 527-1208	32kVA-167kVA	Endless Power UPS	208-600V AC/+10%, -15%	208-600V AC/±5%	50, 60	Three/Three	80kVA	5%	No	Sealed lead-calcium	10	User-specified	76 x 64 x 32	3,100	58-63	Loss of input power, low-level battery, overload, customizable	$36,000-$53,000
	20kVA-600kVA	Durable Power UPS	208-480V AC/+10%, -15%	208-480V AC/±5%	50, 60	Three/Three	225kVA	5%	No	Sealed lead-calcium	10	User-specified	76 x 35 x 110	7,900	67-74	Customers' option	$45,000-$75,000
Isoreg Corp. (800) 225-5078	12.5kVA-62.5kVA	Isoguard	208, 220, 240, 380, 480V AC/+10%, -15%	120, 208, 220, 240, 277, 380, 480V AC/±2%	50, 60	Three/Three	18.75kVA	1%-3%	No	Sealed lead-calcium	10	User-specified	70.5 x 27.25 x 31.5	1,441	55	Loss of input power, low-level battery, overload, bypass fail, overheating, open external DC breakers	$22,600
ITT Power Systems Corp. (602) 741-2602	10kVA-50kVA	VIP 2000 Series	208/480, 220/380V +15%, AC/ -20%	208/480, 220/380V AC/±3%	50, 60	Three/Three	18.75kVA	5%	Yes	Sealed lead-acid	5	20/45	45 x 24 x 32	715	58	Loss of input power, low-level battery, overload, overheating	$32,000
	10kVA-50kVA	VIP 2000 Series	208/480, 220/380V AC/ +15%, -20%	208/480, 220/380V AC/±2%	50, 60	Three/Three	25kVA	5%	Yes	Sealed lead-acid	5	15/35	45 x 24 x 32	810	58	Loss of input power, low-level battery, overload, overheating	$36,000
Liebert (800)942-9477	10kVA-125kVA	Series 300	208, 480, 600V AV/+10%, -15%	208, 480, 600V AC/±1%	60	Three/Three	30kVA	5%	No	Sealed lead-acid	10	User-specified	72 x 36 x 28	1,300	65	Loss of input power, low-level battery, overload	NP
	150kVA-750kVA	Series 600	208, 480V AC/+10%, -15%	208, 480V AC/±0.5%	60	Three/Three	500kVA	5%	No	Sealed lead-acid, sealed lead-calcium	10-20	User-specified	78 x 160 x 38	10,600	75	Power flow indication, battery status,various contract options	NP
KW Control Systems, Inc. (914) 358-5900	40kVA-1,000kVA	Unilinck	208, 480V AC/+10%, -20%	208, 480V AC/1%	50, 60	Three/Three	500kVA	4%	No	User-specified	10-20	User-specified	78 x 125 x 57	17,956	60, 70 optional	Loss of input power, low-level battery, overload, on bypass, overheating	$150,000 - 225,000
	1kVA-250kVA	True Power	208, 240, 480, 600V AC/+10%, -20%	208, 480V AC/1%	50, 60	Three/Three	20kVA	3%	Yes	Sealed lead-calcium	10	20/60	63 x 27.5 x 26.5	2,940	60	Loss of input power, low-level battery, overload, on bypass, overheating	$31,500
MPL Power Systems (804) 262-6068	3kVA-75kVA	Series PGR	120/208, 480V AC/+10%, -15%	120/208, 480V AC/±2%	50, 60	Both/Both	15kVA	5%	Yes	Sealed lead-calcium, sealed gel	10	15/40	77 x 34 x 35	1,800	60	Loss of input power, low-level battery, overload	$18,000-$22,000
	75kVA-500kVA	Series R³	208, 480V AC/+10%, -15%	208, 480V AC/±2%	50, 60	Three/Three	300kVA	3%	No	Sealed lead-calcium, sealed gel, wet cell	10	User-specified	79 x 155 x 35	20,000-25,000	65, 95	Loss of input power, low-level battery, overload	$115-$130,000
Philtek Power Corp. (800) 727-4877	300VA-30kVA	Philtek Uninterruptible Power Systems	208V AC/+10%, -15%	120/240/ 208V AC/±2%	60	Three/One	15kVA	3%-5%	Yes	Sealed lead-acid, sealed-lead calcium (optional), sealed gel (optional)	10	20/55	54 x 28 x 30	1,740	60	Loss of input power, low-level battery, overload	$17,500, (plus $2,570 for batteries)
	300VA-30kVA	Philtek Uninterruptible Power Systems	208V AC/+10%, -15%	120/240/ 208V AC/±2%	60	Three/One	20kVA	3%-5%	Yes	Sealed lead-acid, sealed-lead calcium (optional), sealed gel (optional)	10	12/35	54 x 28 x 30	1,940	60	Loss of input power, low-level battery, overload	$20,625, (plus $2,570 for batteries)
Power Protection Systems (619) 279-0111	5kVA-25kVA	Powermaker ES Series	208/120V AC/86-110%	208/120V AC/±2%	60	Three/Both	15kVA	4%	No	Sealed lead-calcium	10	User-specified	52 x 40 x 30	2,000	60	Loss of input power, low-level battery, overload	$18,725-$23,545
Precise Power Corp. (813) 746-3515	15kVA-165kVA	Russel Motor Generator	208, 240, 480V AC/80%-110%	208, 240, 480V AC/±5%	60	Three/Both	35kVA	3%	No	NA	NA	15 sec./26-28 sec.	39 x 34 x 70	4,200	70	All system functions	$30,000
Sola (708) 439-2800	18.75kVA-56kVA	Interact	208/120V AC/+10%, -20%	208/120V AC/±2%	60	Three/Three	56kVA	3%	No	Sealed lead-acid	NP	User-specified	55 x 32 x 32	1,600	57	Loss of input power, low-level battery	$39,990
Solidstate Controls, Inc. (614) 846-7500	200VA-200kVA	Powerbase 4000	208V AC/+10%, -15%	208/120V AC/±2%	60	Three/Three	15kVA	5%	No	Sealed lead-calcium	20	User-specified	63 x 36 x 32	1,278-1,433	57-59	Loss of input power, low-level battery, overload	$36,260
	200VA-200kVA	Powerbase 5000	480/277V AC/+10%, -15%	480/277V AC/±2%	60	Three/Three	50kVA	5%	No	Sealed lead-acid	10	User-specified	77 x 63 x 32	3,200	63-66	Loss of input power, low-level battery, overload	$37,976
Toshiba International (800) 231-1412, (800) 527-1204 (Canada)	0.5kVA-50kVA	1100 Series UPS 15kVA	208/240V AC/+10%, -15%	208/240/ 120V AC/±3%	50, 60	One/One	15kVA	3%	Yes	Sealed lead-acid	5	10/ 30	70.9 x 31.5 x 27.6	1,600	60	Low-level battery	$22,678
	0.5kVA-50kVA	Mini 2000 Series 20kVA	208, 480V AC/+10%, -15%	208/120, 480/277V AC/±2%	50, 60	Three/Both	20kVA	2%-3%	No	Sealed lead-acid	10	User-specified	68.9 x 31.5 x 27.6	1,038	60	Loss of input power, low-level battery, overload	$32,400
UPSystems (213) 634-0021	1kVA-250kVA	UPS	208, 480V AC/+10%, -15%	208, 480V AC/±1%	60	Both/Both	50kVA	1.5%	No	Sealed lead-calcium	10	User-specified	71 x 43 x 31	1,550	60	Loss of input power, overload, 31 other alarms	NP

Users helping users

10 steps to success from the brains behind Corning's innovative support program

BY BARBARA BRAVERMAN
and CAROL HARTWIG

Editor's note: When novice users are stuck deep in the bowels of Lotus' 1-2-3 or find themselves staring at a mute printer, who do they often ask for help? Other users, of course. Realizing that stumped users were already relying on one another for computer support anyway, Corning, Inc. undertook an innovative support program in early 1988.

The company's "User Resource Network" was designed to shift much of low-level daily support of end-user departments in its Corning, N.Y., headquarters to the departments themselves. Now, almost exactly two years later, company officials say the plan is paying off — in a big way. End users get faster response, IS gets more time to work on meaty applications and business managers get better productivity.

The movers behind the plan, consultant Barbara Braverman and Carol Hartwig, then a manager of Corning's client support services, give you a step-by-step outline of the plan.

Early in 1988, we faced a landscape familiar to many information systems organizations: Fixed head count. Growing demands. Technology that grew faster than IS support staff. Mixed user satisfaction.

Amid all this, certain business functions were migrating from an IBM mainframe to a Digital Equipment Corp. VAX and linking personal computers into the network.

Like many IS organizations, we wracked our brains for solutions.

Do we have users pay for services? Do we outsource? A key goal was to improve service to our internal customers and free IS time from mundane questions so that it could focus on meatier, more strategic applications.

The 120-member divisional staff had people in many fields, including finance, customer service, marketing/sales, engineering, accounting and others. Some business units used our services a lot; others not at all. We wanted to know what was going on. Many users were fairly sophisticated in basic applications such as spreadsheets and word processing. Many had taken computer courses internally or at a local community college.

Two facts of IS life, we knew, would be important here: First, we knew that users rely on other users for help in solving computer-related problems. Unfortunately, there has not been a way to capitalize on this resource and ensure its success. Second, users call people they know for help, although not always the most appropriate person.

The budget for IS support staff would not be increasing to meet the growing need, so it was obvious that changes in our support strategy were needed.

Then we came upon an idea: If users were already helping other users, was it possible to encourage them and perhaps

Armen Kojoyian

- **A way to handle technology growth**
- **IS freed for strategic tasks**
- **An alternative to user fees**

Braverman is president of Computer Thinking, a Rochester, N.Y., consultancy specializing in the human dimensions of technology. Hartwig is communications and personnel planning manager at Corning, Inc.

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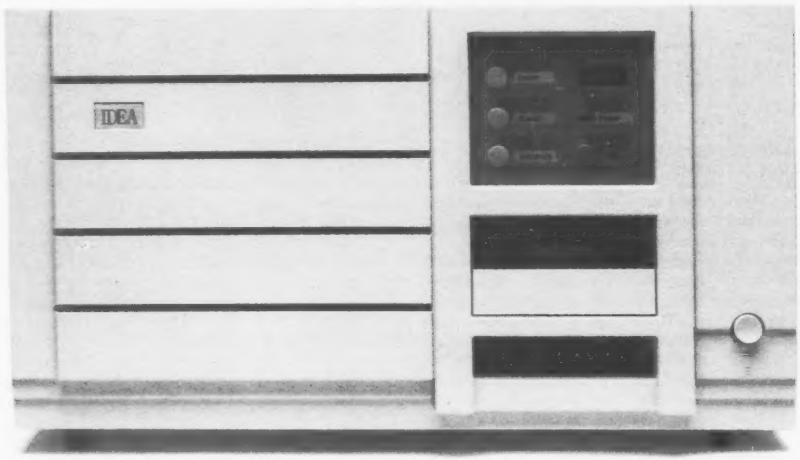

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formalize their role? Was it possible for the IS staff to respond to users with quality customer service skills?

We realized that success depended on changing the way user support was delivered. So in April 1988, we decided to look for new ways to improve internal service. We decided to conduct a pilot study in one unit in Corning's Technical Products Division. Our goals were the following:

- Increase computing effectiveness without increasing IS staff.
- Discover ways of improving support and service.
- Define an acceptable level of support expectations and clearly communicate it to users.

The first phase would focus on assessing user attitudes and evaluating current support strategy. The second phase focused on implementing the new strategy. We chose a 10-person work group that already had a very active user support system in place and put the following 10-step plan into action:

1. Build an active team. Corning uses Corrective Action Teams (CAT) to address various short-term issues within the organization. For this project, we assembled a CAT in the pilot business unit. The four-member team included a user, an information systems staffer, the IS business manager and a consultant.

The team's purpose was to review the overall goals of the process. This meant that they would help design a user survey, interpret the results, provide feedback, fix roles and help monitor the success of our efforts.

2. Conduct a user survey and interviews. A survey of the pilot organization helped assess users' satisfaction with specific IS training and support services. It also helped determine the level of sophistication of user populations and how users typically solve problems.

Surveys were conducted by mail. From a base of 120 users, 83 responded, representing an active group that included both management and staff. Among other things, the survey discovered the following:

- Most users were fairly adept with technology.
- Both management and staff were active computer users.
- Users frequently had formal computer training and thought well of it. However, training by other users was considered even better.
- Most users solved their computer-related problems by asking other users.

3. Interpret the results. It became clear that users were serving several roles in helping to implement technology in their business area.

The first role was as a mentor. The mentor was very knowledgeable about one or more areas of technology. Mentors took the lead in training and support of technology in the business unit.

The second role was that of facilitator. Typically a workgroup supervisor, the facilitator understood the relationship between technology and business and was therefore adept at finding possible strategic opportunities for IS within the business area. He also assumed responsibility for promoting continued growth of new and proficient users.

As we realized how users in our pilot area were effectively functioning, the challenge of formalizing this approach and gaining acceptance from managers and staff in other areas became clear.

4. Link the plan with a business mission. We reviewed the division's strategic business plan and identified objectives to which our project could contribute, such as bringing office automation into the organization.

Tying the project into the goals of the business unit and showing how it would help the organization's bottom line were powerful persuaders.

Specifically, we showed how less time would be spent on solving problems and how new projects could be implemented more quickly.

5. Ensure management buy-in. From the start, it was clear that the project depended on getting high-level support from both the IS organization and business unit. If things were going to change, we knew we needed their blessings to empower the users to do more IS-type activities. The manager of client-support services kept the vice-president of IS well

At Corning, Jim Blackburn helps users press their own keys

BY JOSEPH MAGLITTA

Officially, Jim Blackburn is supervisor of sales administration for Corning Optical Products, a division of Corning, Inc. But to his co-workers, he's also the "Power User Facilitator" — a technological Florence Nightingale helping advanced departmental computer users wrestle with hardware and software problems.

As departmental guru, Blackburn is a key player in a new plan by Corning to shift low-level computer support to end users. A self-described "hacker," Blackburn can pop open a personal computer in a wink or talk about terminal emulation, local-area networks, print spooling and a host of other topics with equal ease. His technical savvy and high spirits have helped make the pilot program so successful that Corning is now rolling it out to other divisions.

What a difference two years makes. Before the program began in early 1988, trying to get help was "like a voice crying out in the wilderness," Blackburn says. Nine people in the busy department were trying to learn computers and tackle problems right on the job.

"Instead of doing customer-service work, we were spending a pretty fair amount of time trying to unsnarl PC problems. It was very unproductive," he recalls.

Computer problems were handled in a willy-nilly way. "Each person had an idea of the person to call. It was the person they were most comfortable with," Blackburn says.

Corning's Blackburn: *On-site guru*

Problems got solved, but many felt that the whole process was disorganized and inefficient. Users balked at getting help from a telephone Help line set up by Corning's information services department, largely because they did not like talking to a faceless and unfamiliar voice. When information systems people were called, they often had to drop everything to handle a low-level problem.

The situation became critical in 1988, when the department began shifting applications from an IBM mainframe to a Digital Equipment Corp. VAX system. Fortunately, Carol Hartwig, then a manager in Corning's client support services, realized that her department had a poor reputation for service and set about forming a "User Resource Network" support program.

Two people in the department became technical "mentors," joining Blackburn, the "facilitator" or top mentor. The goal was not to make everyone a speed-demon power user but to ensure basic competency and fast problem solving.

Surprisingly, selling users on the idea of formally handling their own support was fairly easy, Blackburn says. After all, the program was largely a matter of formalizing existing arrangements. "It was not an issue of people saying 'Hey, I'm doing more work, what am I getting for it?' People were doing the work before. Now they were getting recognized for it." The only rough spot came early in the process, when users had to learn the proper way of handling a problem. "Should they solve the problem themselves? Read the manual? Go see their mentor? Have me fix it?" Blackburn explains. After a while, this organized questioning process became automatic, he says.

The users-helping-users idea quickly took root and has since been pronounced a success by both Corning users and IS management. It has also sparked several changes — all positive — in how the department works, according to Blackburn.

For one thing, departmental users have become more technically sophisticated and confident. "It used to be that our people would go to the IS people and say, 'I need the sales history from the Latin American region, and I need it tomorrow.' Now, they know to be more specific." Users are also better able to quickly spot problems that are out of their league, Blackburn says.

Such confidence in turn has helped users think about new ways of applying technology to their daily work. Users "are more willing to get off the beaten path and to do more. If they get into trouble, there's help right there to get them out of it."

Perhaps most important, however, users and IS alike say they feel that being freed from trivial problems allows them to focus on more strategic tasks.

Blackburn's advice to organizations interested in setting up user-to-user support programs? For starters, he recommends making sure to establish a good relationship between IS and business departments. "And make sure you get a commitment from authority, and find a champion with the authority to make decisions."

Maglitta is a *Computerworld* senior editor, in depth/integration strategies.

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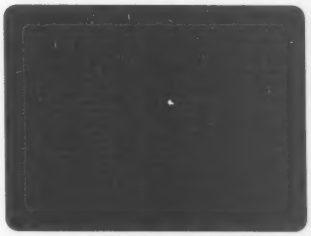
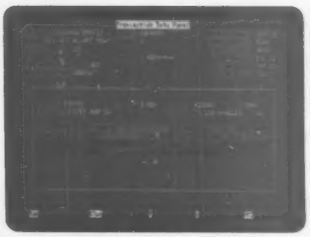


A traditional 3270 display.



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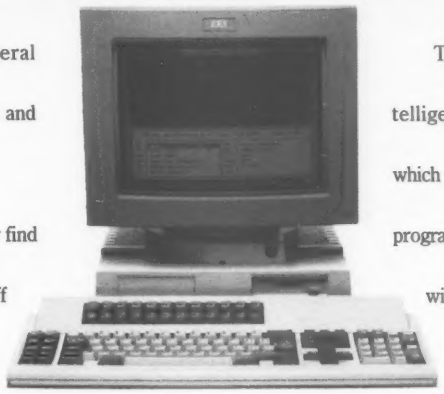

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informed by building support for the need to change and implementing needed strategies. At the same time, the IS business manager made sure that the vice-president of the business unit was enthusiastic about the group's efforts. In conversations with both executives, the point that users were already providing much support for one another was stressed. In a sense, all we wanted to do was organize and formalize the process.

6. Develop support within IS. For an end-user plan to work, the IS organization needs to understand the current support scheme and the users' role in it.

The IS business manager is key to the implementation of technology. We realized that this role was the linchpin in the redefinition of IS support strategies.

A nine-member advisory group — consisting of three IS business managers, five managers from client-support services and a consultant — was formed to serve three important functions: To provide feedback on alternatives for delivering IS support, roles and responsibilities; to provide reality testing for the IS organization; and to help decide when the evolving support strategy could be brought to other business units.

7. Communicate clearly. As a change in business procedures becomes a reality, resistance typically follows. Some users worry about formalizing their responsibility for technology. Some IS staffers worry about losing or significantly changing their job descriptions.

Internally, a key method of defusing problems is to clearly explain to both users and IS managers the limitations of the current situation and the benefits of changing. Ongoing, informal communication helped work-group members better understand the project and allayed many misconceptions and fears. In the later stages of the project, the focus shifted from information gathering to information dissemination. Management was routinely given updates.

We developed a formal slide presentation describing the history of support strategies at Corning, the results of the survey and the new approach to support. This presentation was presented to IS management and company directors.

8. Define IS changes. Making a major change in IS support requires other organizational changes. To help IS staff adjust to the new role, we developed a day-long course called "The IS Customer." We tried to impart the idea that users were not just users but IS customers.

As a basis, we used the book *Moments of Truth* by Jan Carlson, president of Swedish airline SAS. His attitude was that SAS was running a customer service business, not merely an airline. We used video, slides and role-playing, all of which were specifically designed to get IS people excited.

The pitch is that by letting users handle lower level problem-solving, IS people can be freed to do more interesting, in-depth and technical projects. Formally shifting some support responsibilities to the users required some work. For example, we needed to develop a problem-solving resource list to help users tackle their own problems more effectively. Better application documentation was also needed. The changing role will mean that IS staff will have to do the following:

- Understand the role of users as they develop increasing responsibility.
- Adopt a customer service approach to problem-solving.
- Look for ways for IS to make an impact.

Will it work in your shop?

Success with end-user support programs requires the following key conditions:

- A buy-in on the part of IS and business management.
- A willingness to experiment with new ways of doing business, so that support can be delivered more effectively.
- A commitment to the partnership by employees of both IS and business units. Each must contribute time, energy and resources.
- A sponsor who has a vision of the future and is willing to take risks to move toward it.

9. Define user changes. On the users' side, we are developing an awareness course for potential facilitators, called "Managing Information Technology." The gist of the half-day course is that you are managing technology whether you want to or not, and here's how you can do a better job.

Specific changes will include the following:

- Build in IS expectations into people's job descriptions.
- Ensure that appropriate training opportunities are available for facilitators, mentors and users.
- Whenever appropriate, information systems should be used as a tool in meeting the business plans of the work group.

10. Assess progress and refine. Impact interviews are a good tool for refining strategies for bringing the end-user support program into other parts of the organization. We are currently working on an ongoing monitoring system to assess the program's effectiveness.

Using lessons learned from the pilot project, we are now bringing the User Resource Network to the next organization, a research group, and eventually to the whole corporation. •

In a perfect world applications from different companies would work together like they came from the same company.

NAS. The pe
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Digital's Network Application Support (NAS) lets you integrate applications and share information across your multivendor environment.

Up to now, the dream of getting all your applications to work together has been just that – a dream. Digital's NAS now makes it a reality.

NAS is a set of software products for using and developing integrated applications running on different vendors' systems. While other computer companies are still wrestling with how to get their own computers to work together, Digital – a company whose computers have always worked together – offers a way to get your applications to work together. Even those running on systems that aren't ours. In fact, NAS works across the widest range of systems in the industry.

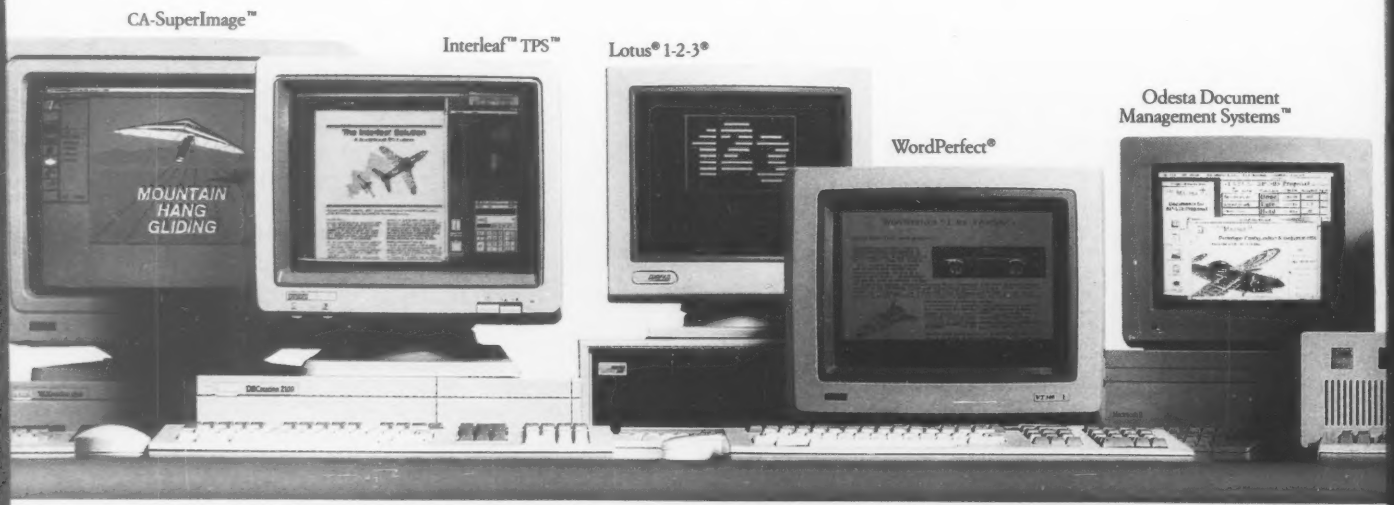
NAS. How it works.

Using a typical example, we'd like to show you one of the many ways NAS can be used in your real-world environment.

You can take graphics from an Apple Macintosh,® a Lotus® spreadsheet from an MS-DOS™ PC, a drawing from a UNIX™ workstation, data from an IBM® mainframe, a scanned image from the network and integrate them all into a single report. You can then send it electronically to others anywhere on the network, and even include up to the minute connections to source data. Sound easy? With NAS it is.

NAS. Why it works.

Achieving integration like this requires just the things Digital is very, very good at. Like networking. And



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software compatibility. And the adoption and promotion of open standards. Digital's leadership in these and other key areas is what makes NAS unique.

NAS. What it means to you.

Simply put, NAS gives you unequaled freedom of choice.

For IS managers, NAS means you can choose to grow in any direction you want. Also, the systems you chose in the past will work with NAS. So, your investment is protected.

For developers, NAS means you can write software once and know it will work on other systems. Savings in time and money can be substantial, allowing you to focus on improving your applications or reducing the backlog.

For users, NAS means you can continue to use the applications you're most comfortable with, but also be able to share information with others much more easily.

For the whole company, NAS means that with more computers working together, more people are working together. That, of course, means more productive workers and the ability to compete more effectively.

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Getting all your applications to work together is not some promise, somewhere down the road. NAS is here. Now. For more information on NAS, call 1-800-842-5273 ext. 215. Or call your local Digital sales office.

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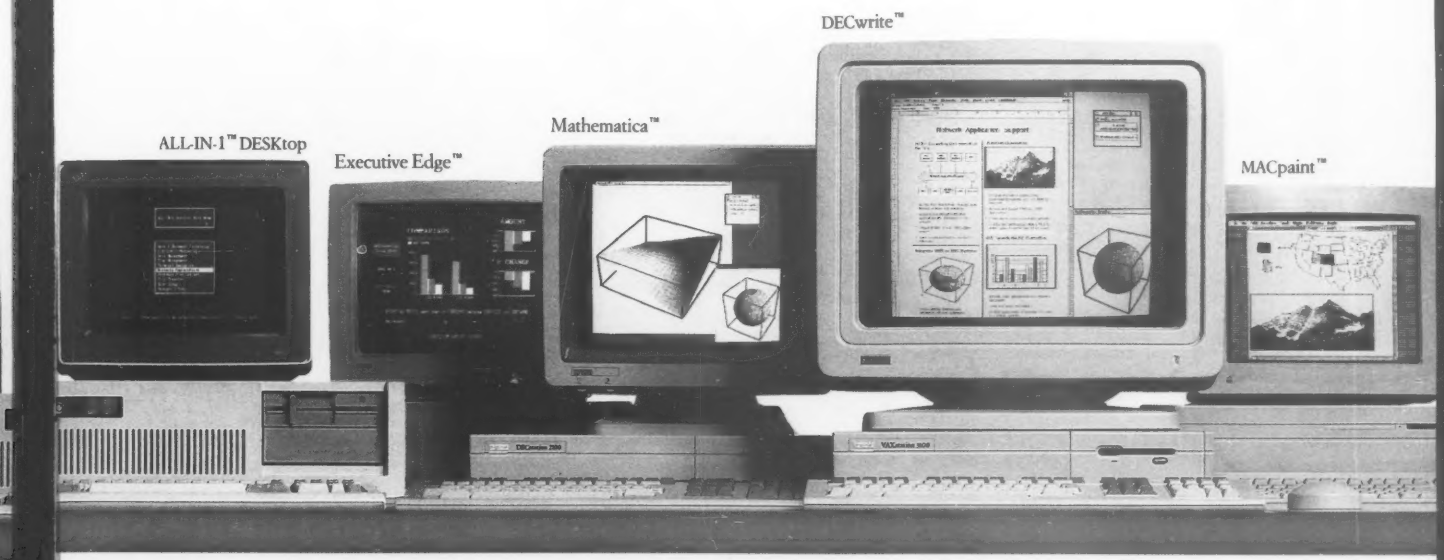

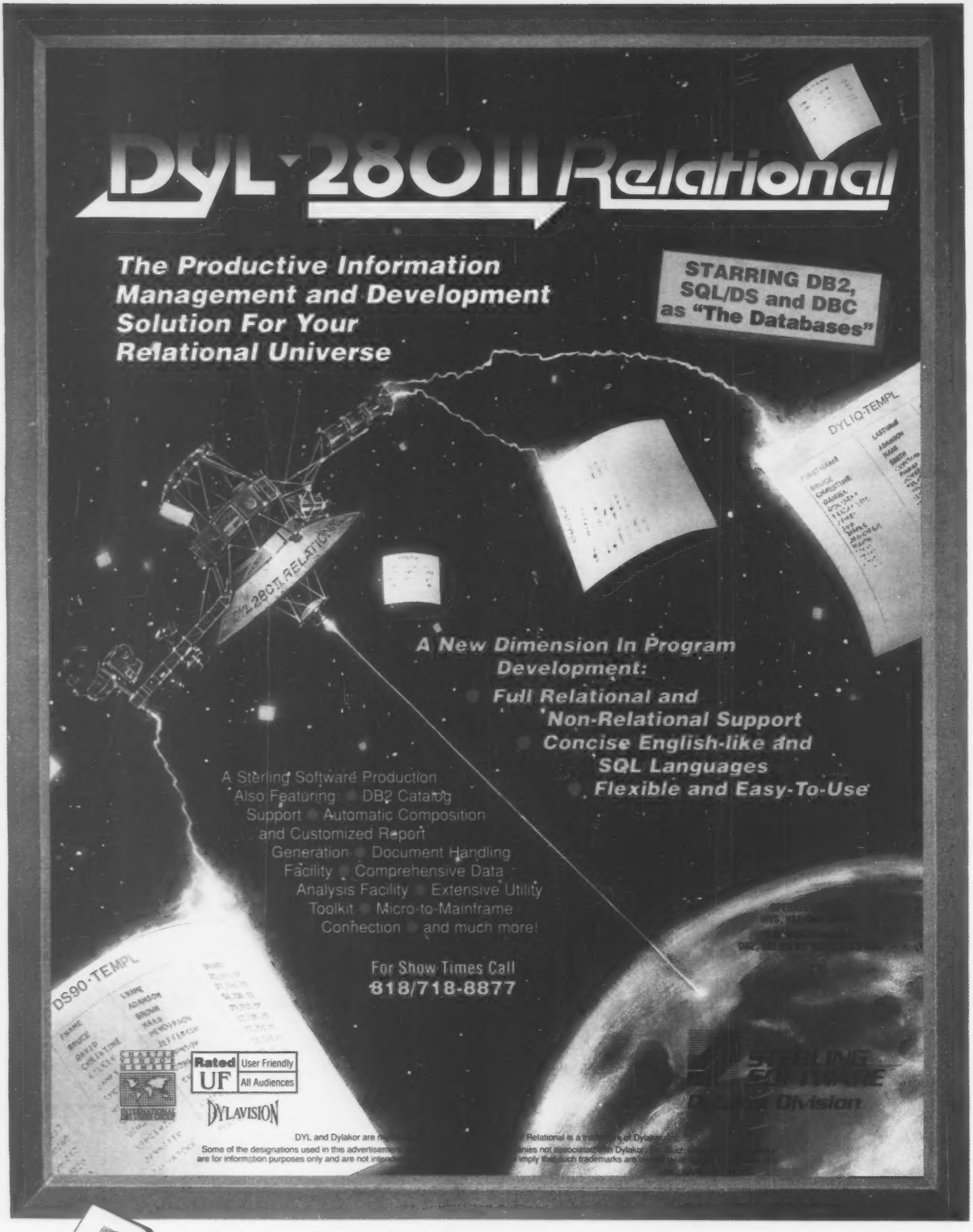

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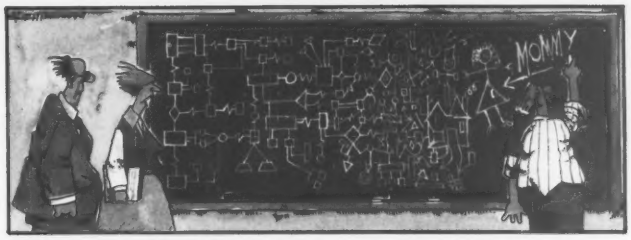

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   - **80.** Manufacturer of Computers, Computer-Related Systems or Peripherals
   - **85.** System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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   - **22.** Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; Dir./Mgr. PC Resources
   - **23.** Dir./Mgr. Sys. Development, Sys. Architecture
   - **31.** Mgrs., Supry. of Programming, Software Dev.
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   - **60.** Sys. Integrators/VARs/Consulting Mgt.

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   - **12.** Vice President, Asst. VP
   - **13.** Treasurer, Controller, Financial Officer
   - **41.** Engineering, Scientific, R&D, Tech. Mgt.
   - **51.** Sales & Mktg. Management

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   - **70.** Medical, Legal, Accounting Mgt.
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   - **D.** Communications Systems
   - **E.** Local Area Networks
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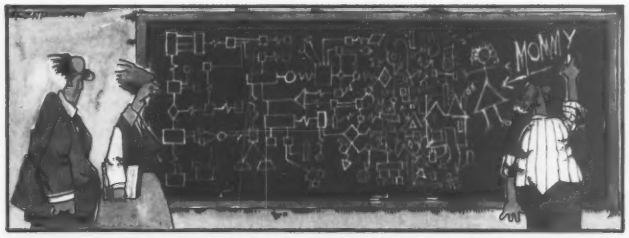

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   - **65.** Communications Systems/Public Utilities/ Transportation
   - **70.** Mining/Construction/Petroleum/Refining/Agric.
   - **80.** Manufacturer of Computers, Computer-Related Systems or Peripherals
   - **85.** System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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NATIONAL
BRIEFS

Costly complaint
Avoiding the uncertainties of arbitration, Zenith Electronics Corp. and Groupe Bull last week settled their two-month wrangle over the purchase price of Zenith Data Systems. France-based Bull, which had sought a $49 million rebate from the original $496.4 million sale price, agreed to pay an extra $15 million plus interest for the computer products subsidiary that it acquired from Zenith Electronics late last year.

Image-conscious
United Telecommunications, Inc. shareholders have agreed to change the company's name to Sprint Corp., effective next month. In the process, the company will buy out the 19.9% limited partnership interest that GTE Corp. currently holds in the U.S. Sprint long-distance carrier.

Formative market
Wicat Systems, Inc. said last week it will formalize a one-year cooperative marketing agreement with IBM and become an IBM Service Partner, teaming up to jointly market integrated learning systems to elementary and secondary schools in the U.S.

Health insurance for computers

Viruses and other 'vandalware' fuel growth of new industry

BY MICHAEL ALEXANDER
CW STAFF

Computer viruses, which can wipe out valuable data in less time than it takes to read this sentence, have reached epidemic proportions in only a few years. What's more, the epidemic and the costs of coping with the problem are bound to get worse, according to several computer security experts.

A virus is computer code that replicates and inserts itself into a program and runs when the program is executed. Unlike a computer worm, another form of "vandalware" that also reproduces, a virus is not a distinct program and cannot run by itself. The harm that viruses may do ranges from causing a message to pop up unexpectedly on a user's computer screen to the complete and irretrievable loss of data and programs stored on a hard disk.

Calculating industrywide sales of antivirus software is difficult because all of the publishers in the business are small privately held companies, often with only one or two employees.

There are at most 20 publishers of antivirus software that market "scan programs" to detect viruses, "vaccines" that prevent machines from being infected and "antidotes" that help to remove viruses. Any one of those products is only as good as yesterday's virus, thus requiring end users to regularly update the programs they use to keep ahead of the latest strains.

Some virus experts suspect that viruses are developed and unleashed by companies that also publish antivirus software, as a way to prime their markets — a charge that has never been substantiated.

"There are two antivirus software packages on the market that were probably written by people who have written viruses," said Eugene Spafford, assistant professor of computer sciences at Purdue University.

The rate at which new viruses are being discovered is accelerating, and with corporate America's increased reliance on local- and wide-area networks, viruses also are spreading faster than ever, security experts said.

"There are currently over 100 viruses and variants for the IBM PC and

Continued on page 112

Exterminator bills
The harm that a virus might do to your computer system is virtually incalculable. As the incidences of viruses mount, the damage to your corporate coffers could also be considerable

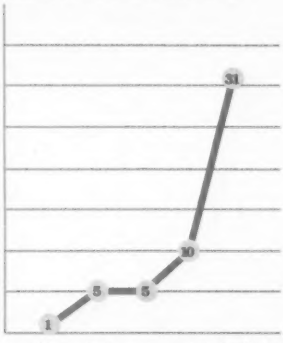
Cost of hiring two-person antivirus 'SWAT' team
$120,000–$150,000

Cost of protective software
$5–$10 per month per machine

Anticipated costs of lost data, downtime and recovery efforts due to viruses
$10 billion or more over next 5 years

Anticipated cost to worldwide microcomputing community of removing malicious software
$1.5 billion per year

A growing problem
Number of distinct IBM/PC viruses



Source: Eugene Spafford, Purdue University

CW Chart: Tom Monahan

New DisplayWrite 5. Get what you want, without giving up what you have.

New for DOS, DisplayWrite® 5 has what it takes to give users and buyers alike the power, speed and flexibility they've been asking for.

In fact, there are 35 new features. Like split-screen editing that lets you edit and share text between two documents at once. Next, there's Page Preview so you can see text in a WYSIWYG environment to make sure it looks its best before printing. There's even a new command line interface to bypass menus and streamline your work.

The new DisplayWrite also offers advanced merge options, multi-column formatting, support for a wide variety of fonts and more printer support than ever.

And since the new version is compatible with the entire DisplayWrite family, your company's current investment in software and training remains intact. The uncomplicated pulldown menus make it easy for experienced users to employ new features and for new users to learn, right from the start. If anyone has a question, a toll-free support line is there to help.

New DisplayWrite 5: with everything it has, you're bound to get exactly what you want.

Upgrade now. See DisplayWrite 5 at your local dealer or call 1 800 IBM-7699, ext. 218 for more information.

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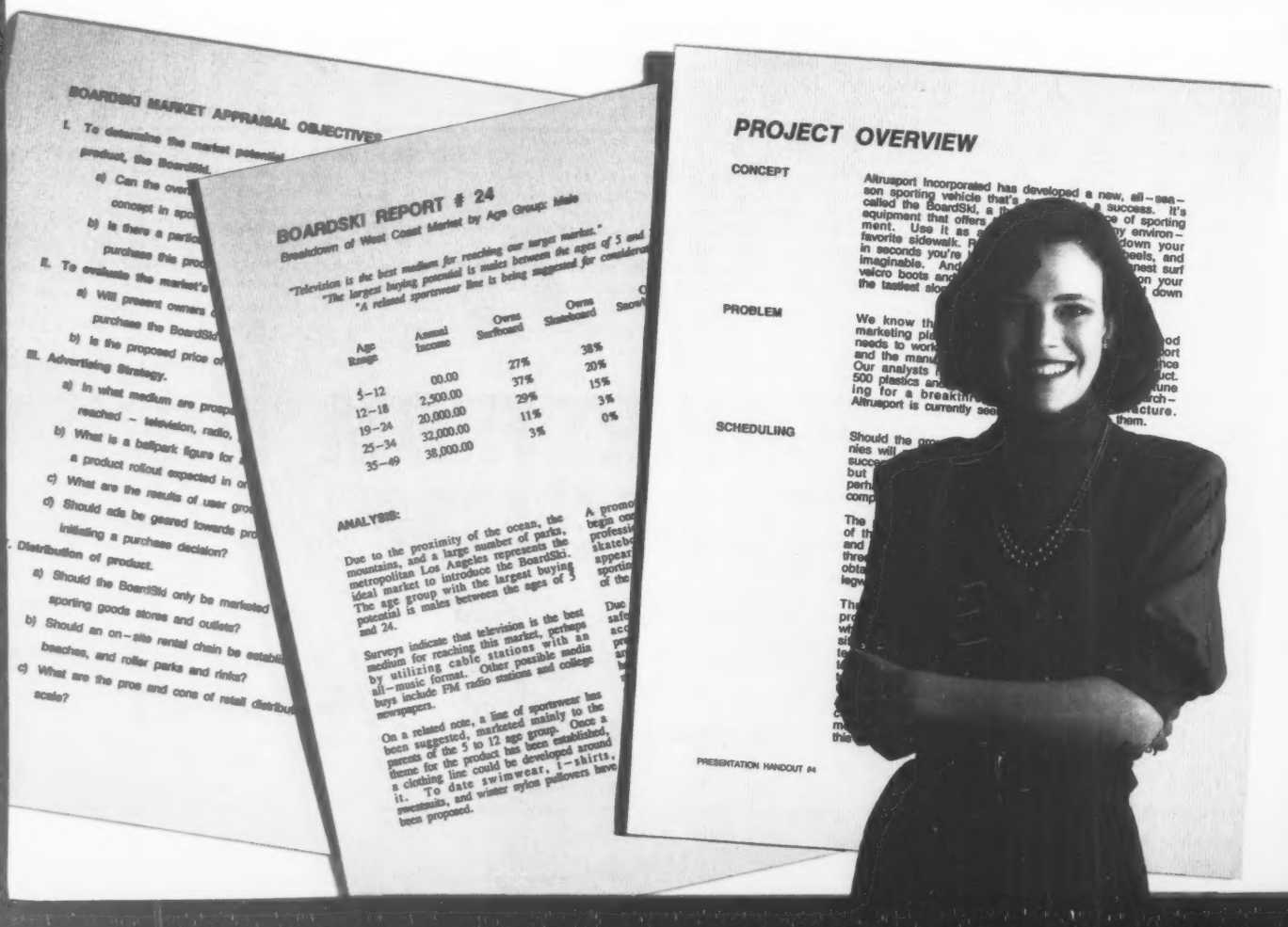


AT&T eyes networking, Unix path

BY JOANIE M. WEXLER
CW STAFF

In light of a recent statement by AT&T executives that its Computer Systems business unit has "bet the ranch" on systems integration and Unix servers, the company's sale this month of its Synchronous Terminal Products division to Memorex Telex Corp. is a step in that direction.

"This agreement will permit AT&T Computer Systems to focus on its primary mission of providing networked computing solutions," AT&T's Robert M. Kavner said in a prepared statement. Kavner is group executive of AT&T's Data Systems Group, which includes AT&T Computer Systems, Synchronous Terminal Products and Unix Software Operation.

At a recent symposium for customers, Kavner also hitched AT&T's computer future to its Unix server strategy. "If Unix isn't the dominant file server operating system in the 1990s, then shame on us," Kavner said.

Memorex Telex, a supplier of IBM 3270 displays, printers and controllers, has purchased for cash and stock virtually all of the assets of Synchronous Terminal Products, including marketing, sales and development units.

Market will disappear

Norm Weizer, senior consultant in the Information and Telecommunications Systems Group of Arthur D. Little, Inc. in Cambridge, Mass., viewed the sale as a move by AT&T — a "fairly minor player last time we looked" — to leave a non-growth market. "The market will slowly disappear over 10 years," he said.

AT&T retained the right to handle, as a systems integrator, sales and service of its 6500 Multifunction Communication System (MCS) line of data terminals, printers and intelligent controllers, which operate in 3270 and other host environments, when it fits into a customer's networking or telemarketing application. AT&T said it will continue to manufacture the MCS line for at least two years.

In general, all other Synchronous Terminal Products customer support will become the responsibility of Memorex Telex.

In addition, AT&T will receive royalties on any products Memorex Telex sells into a 3270 environment, according to AT&T spokesman Andrew Myers.

Myers said the sale "doesn't mean that the company is backing away from the 3270 marketplace."

Firms enjoy first-quarter gains

BY RICHARD PASTORE
CW STAFF

The first rush of quarterly returns blew through Wall Street last week like a breath of sweet spring air. But analysts tempered their jubilation by noting that it is easy to look good when comparing this year with last year's weak first quarter.

Tandem Computers, Inc., for instance, posted what looks like excellent percentage growth. "But you've got to realize that last year was a disaster, so it isn't that wonderful," said David Wu, an analyst at S. G. Warburg in New York.

Actually, Tandem's revenue was about 5% lower than expected, Wu said. The company attributed the shortfall to delays in closing large contracts. Despite tough competition from IBM, the firm's fault-tolerant Cyclone mainframe is ahead of plan, Wu said.

Lotus Development Corp.'s 330% profit growth must also be taken with a grain of salt, analysts said. Last year was a bad one for the spreadsheet king because of the infamous delay in shipping 1-2-3 Version 3.0. Now that the products are rolling out the door, things are looking up.

Lotus had "year-to-year revenue gains in all of our product areas and all of our principal world markets," Chief Financial Officer Bob Schechter said.

No one is gainsaying **Microsoft Corp.'s** continued success, however. The software giant earned 58% of its quarterly revenue overseas. In the product arena, "the Microsoft Word family was particularly strong," President Jon Shirley said.

International sales saved **Apple Computer, Inc.** from a mediocre quarter, observers said. The firm grew its foreign sales by 47% over last year's first quarter. The company also told analysts that mid- and high-end Macintosh sales were brisk — the Mac FE 30, IICI and IICX in particular.

However, Apple warned analysts that it expects combined international and domestic sales to grow only 7% to 10% over the next two quarters.

AST Research, Inc. also logged impressive gains, especially in light of its $1.3 million net loss in the same quarter last year. The firm said orders for Intel Corp. 80386-based systems were up 20% over the previous quarter.

Fortunes are also improving in the chip arena. **Intel** again achieved healthy profit growth. Chief Executive Officer Andrew Grove cited the growing popularity of 32-bit architectures. "Our first-quarter 386 microprocessor shipments have more than doubled compared with the first quarter of 1989," he said.

Motorola, Inc.'s growth was none too exhilarating overall, but CEO George Fisher said: "There are some promising early indications of renewed strength in the semiconductor industry."

For the quarter, Motorola said its chip sales rose 13% and backlog was up 17%. Operating profits were lower.

Unisys Corp. CEO James Unruh expects last year's restructuring to have its greatest impact in the second half of this year, but some of the positive effects are already showing up, he said. Though Unisys suffered a net loss of $3.2 million, that compares well with a loss of $78.7 million a year ago.

Also, the firm brought down its debt level "in a quarter when debt typically increases," Unruh said. "These are positive signs that our restructuring actions are working."

The one real downer came from **NCR Corp.**, which reported returns below expectations. Lower gross margins and a $1.6 million share repurchase program were the prime culprits, according to CEO Charles Exley Jr.

NCR appears to be a victim of its own discounting. The lowered margins were due to discounted shipments to major accounts in the U.S. and Europe, according to the company.

Though he remains concerned about the competitive margin pressures, Exley said: "We still see the opportunity to achieve single-digit revenue and earnings growth for the full year."

1990 first-quarter earnings

All smiles, few complaints

Company	Revenue Jan. through March (in millions)	Percent change from 1989	Net income Jan. through March (in millions)	Percent change from 1989
AST Research	$137.2	21%	$9.6	—
Apple	$1.3B	8%	$131.8	194%
Intel	$894	25%	$144	48%
Lotus	$165.5	33%	$22.8	330%
Microsoft	$310.9	58%	$75.2	83%
Motorola	$2.53B	16%	$127	3%
NCR	$1.3B	1%	$52	(15%)
Tandem	$451	24%	$26.8	59%
Unisys	$2.31B	5%	($3.2)	—

Parentheses indicate a reduction or loss

CW Chart: Doreen Dahle

INDUSTRY INSIGHT

Nell Margolis

Stocks don't stack up

Just when the worst of flu season seemed to be behind us, a virulent case of swollen expectations hit Wall Street's technology sector over the past several weeks, temporarily felling several of the computer industry's usually proudest performers.

The likes of Oracle Systems, Tandem Computers, Legent and Network Equipment Technologies lined up to fall down in reports or warnings of March quarterly earnings well below expectations. Analysts reeled. Stock prices plummeted.

Users had every right to feel supremely unsettled. As one computer company chief executive officer recently noted, "When one of the giants takes a stock hit, I worry about what my own company's customers are thinking. I picture them saying . . . 'What does that mean for the other guys?' "

What this quarter's recent shockers mean is likely to add up to a good deal less than the sum of its parts.

For starters, let's remember what's at stake here: stock. As anybody who has spent five minutes watching Wall Street knows, "rational market" is an oxymoron, and you can make that double when it comes to computer company stocks.

A technology analyst's report that XCo's widget doesn't work tells you a lot about XCo's widget. A financial analyst's report that XCo's stock is a poor investment might tell you the same thing — but odds are better that it doesn't.

A case in point is Tandem's recent announcement that it expects to report net income for its recently closed second fiscal quarter below — maybe well below — analysts' estimates.

Even as stockholders voted with their feet, pounding Tandem stock down 4.6 points in one day, analysts registered ongoing confidence in the company, its management and particularly its wares.

The recently introduced Cyclone high-end model, "is a fundamentally compelling product," Hambrecht & Quist's J. Neil Weintraut said. In the categories in which it competes, he said, "it's the best performer out there; it just stands alone."

So if the products are great and the economy isn't heading further south than we already knew it was, who is responsible for *l'affaire Tandem*? Tandem, according to Weintraut — but probably by dint of overoptimism.

The following scenario, he said, is easy to imagine: "Tandem showed a new, sexy product — Cyclone — and probably each DP manager who saw it, and who heard [Tandem CEO James] Treybig's exciting presentation, lined up like a kid in a toy store to say 'I want one.' " And they no doubt did, he said. Unfortunately, as many a kid in a toy store has discovered, the seemingly short distance between "I want one" and "You've got it" is slippery indeed.

Now Tandem knows it, too.

And Oracle knows the pitfalls of entering orders in the wrong quarter (you might have to back them out at the last minute and find yourself with scanty instead of stellar gains in net earnings). And Legent knows the pitfalls of believing that you can iron all the kinks out of even a friendly "merger of equals" in one year (you can't, and the efforts tend to show up on the bottom line now and again).

And what do the rest of us know? Probably a whole lot less than we think we do when a Big Guy takes the occasional tumble.

Conventional wisdom has it that once is an incident, twice is a pattern, three times is a trend. Stock market trends are critical for users to mark: Whether the logic of it is valid or fatally flawed, the fact is that unattractive stock leads both directly and indirectly to funds drying up, with probable dire consequences for research and development, service and support.

For those who deal with companies as purveyors of goods and services, however, stock market patterns are a lot less meaningful than stock market trends, and stock market incidents even less than that.

Margolis is *Computerworld's* senior editor, industry.

INTERNATIONAL BRIEFS

Asian extension

Expecting growth in the popularity of DOS extenders in Japan, Software Japan Co. will begin marketing a DOS extender, jointly developed by Rational Systems, Inc. and Tokyo-based Lifeboat, Inc., to Japanese developers next month.

Redundant pacts

The twin titans of the fault-tolerant market, Stratus Computer, Inc. and Tandem Computers, Inc., spread their wings farther abroad last week. Stratus announced marketing, servicing and support pacts with distribution firms in Venezuela, Mexico and Columbia. Tandem, meanwhile, formed joint ventures with EBB AG in Switzerland and Engineering-Ingegneria Informatica S.p.A. in Italy to provide project management and contract consulting for large, on-line application projects.

Taiwan follies

Software piracy allegations continue to dog the Taiwanese computer industry. The Business Software Alliance last week disclosed criminal proceedings for alleged unauthorized copying of Lotus Development Corp.'s 1-2-3 and Ashton-Tate Corp.'s Dbase III Plus software by Atari Taiwan Manufacturing Corp., a subsidiary of Pacific Electric Wire and Cable Co. in Taipei and Atari Corp.

Mario mashers

Nintendo of America, Inc. also found a Taiwanese connection in a Wilmington, N.C., sting operation conducted by the U.S. Customs Service. Two Taiwanese citizens, along with two Florida residents, were arrested April 12 and charged with trafficking counterfeit Nintendo video game cartridges. Nintendo also announced last week it has launched an aggressive anti-piracy campaign. Nintendo said counterfeit cartridges and adapters required for use on its video game system are being manufactured in Taiwan and loaded up with as many as 40 illegally duplicated Nintendo licensed software games.

Will Phoenix ever soar again?

BY MAURA J. HARRINGTON
CW STAFF

NORWOOD, Mass. — One month after flatly rejecting an attempt to buy it out and take it private, Phoenix Technologies Ltd. remains mired at the bottom of the stock market chart, has yet to complete a lengthy reorganization and risks further alienation from shareholders as reports of insider trading leak out. Still, company management is intent on retaining control.

Many say that Phoenix is a prime example of a successful company that failed because of bad management and an all-too-rapid growth rate.

Yet with several top management positions still vacant after a 6-month-long reorganization — including openings for chief financial officer and chairman — and the common stock valued at barely $3 per share, Ron Fisher, Phoenix's president and chief executive officer, claims the company will rebound by Sept. 30, the end of its fiscal year. "We've taken the company down to size. The focus is on the mark as far as rebooting business and the revenue stream [are concerned] . . . Even the morale of employees is starting to pick up," Fisher said.

However, many stockholders who still own a share of Phoenix said they are disappointed with the firm and feel their stock losses will never be recovered.

Although a Phoenix spokesman reported that Colvin sold 75,000 shares of his stock on the common market between Feb. 14 and March 7, the Securities and Exchange Commission has a record of only 10,000 of the shares, according to a report generated from Investnet, a company that tracks insider trading.

Former CFO David Parkinson also sold half of his 115,261 Phoenix shares on Sept. 14, 1989, for $4 per share, just 16 days before the end of fiscal year 1989. On Nov. 20, 1989, Phoenix reported a $7.68 million loss for the year. Parkinson, also unavailable for comment, sold the rest of his stock shortly before he left the firm, according to "The Insiders' Chronicle," a Boca Raton, Fla., newsletter that tracks insider trading.

Also, between Dec. 9 and Dec. 14, 1989, Thomas Stellinger, vice-president of administration at Phoenix, sold 77,000 shares of stock for between $4.25 and $3.75 per share, retaining 23,599 shares, according to "The Insiders' Chronicle."

Dan Barnett, general partner of Norwood Partners Limited Partnership, a private investment firm, offered $5 per share last month to Phoenix stockholders to buy out the company, with plans to take it private.

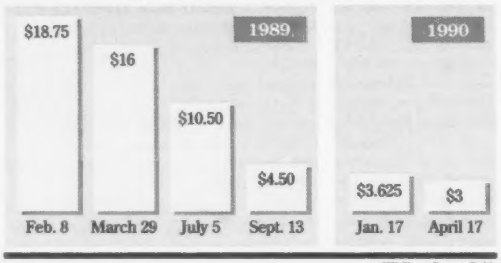
When Fisher refused Barnett's offer, Barnett claimed Fisher was not acting in the best interests of the shareholders. However, Barnett said he would do nothing because Colvin and other board members own a majority of the stock.

Barnett later claimed that stockholders are behind Norwood's attempts and could potentially sue Phoenix board members for not acting in their best interests.

One former employee who owns a small amount of Phoenix stock said he continued to have faith in Phoenix until last month, when he found out that its chief technical officer, Neil Colvin, had sold approximately 75,000 shares of his more than 2.8 million shares.

Fiery descent

Unlike its soaring mythical namesake, Phoenix Technologies has seen its stock market trading price plummet like a rock



CW Chart: Doreen Dahle

Viruses

FROM PAGE 109

Macintosh alone," Spafford said. "Current growth rates indicate that we may see that many new ones in just the next 18 months."

Even if no new viruses are created, the cost to the worldwide microcomputing community is likely to exceed $1.5 billion simply to periodically remove malicious software, according to Peter Tippett, president of Foundationware, Inc., a Cleveland-based publisher of antivirus software.

"The potential costs involved in lost data, system downtime and recovery efforts are likely to exceed $5 billion to $10 billion dollars in the next five years," Tippett said.

Calculating the cost of eradicating and recovering from computer viruses may be nearly impossible, argued Harold Highland, an expert on computer viruses and editor of the *Computer Virus Handbook.*

"You can put any price tag on it you want," Highland said. Figures such as Tippett's are based on assumptions that companies are not going to take better precautions to prevent virus attacks or that computer technology will stand still, he said.

"Firms are not going to continue with business as usual," Highland said. Corporate America is "very concerned about viruses and [is] getting to the point where [it] will adopt specific security measures" to ward them off.

Companies "are going to have to make the assumption they are going to get hit sooner than later if only from employee carelessness," Highland said. "The question you have to ask is: 'What do I have to spend to clean up quickly?'"

Highland advocated that large corporations be willing to employ "two top-notch micro people" who are charged with educating users about sound computer practices, scanning all software that is brought into the company and cleaning up virus outbreaks whenever they occur.

The 'SWAT' team and hardware would cost between $120,00 and $150,000 per year, he estimated. "[Firms] are going to have to accept it as a cost of doing business in the same way a retail store factors in the cost of shoplifting," he said.

The alternative is to buy different antivirus programs at $5 to $50 apiece per machine, which would have to be replaced every few weeks as new viruses are introduced, he said.

Down and out of virus coverage

Whether damages to computer data or downtime resulting from a virus attack are covered by insurance is "still not clearly defined," according to John Lamberson, vice-president of the technology industry division at Carroon & Black Corp., an insurance consulting firm based in San Jose, Calif. "There is no industrywide insurance standard or even a consensus on whether a virus is covered."

The coverage issue is typically handled case by case, he said: "It is safe to say that if a company has a problem, it can look to the insurance carrier on the computer equipment for relief, especially if there is damage to the system, for coverage of data, downtime and related costs."

It is not likely that the value of the data or the lost information would be covered, however. Lamberson predicted that the insurance industry will ultimately devise specific policies aimed at covering losses resulting from virus attacks.

"A few companies are already looking at it, but the wording of the policies is very specific," Lamberson said. "A couple of other companies offer virus coverage, but [only] as an endorsement to the basic policy. Usually, they are not particularly interested in providing that coverage to companies with large-scale data processing operations."

The cost of virus coverage varies widely and is determined by several variables — the size of company, the type of computer system it is trying to protect and the dollar amount of the coverage that it wants, Lamberson said.

The limit of the insurance being offered is "pretty low" — about $100,00, he added. The potential consequences of a virus attack are likely to be far more costly. "Many companies would exhaust that amount in a single day of downtime and then be left holding the bag for the next three," Lamberson said.

More insurance companies are trying to attach virus exclusion clauses to policies covering computer equipment and are succeeding, according to Lamberson. He suggested that information systems managers and chief information officers be more involved in the insurance-buying process to see what their options are in the event of a virus attack. "It may be apparent that if there is a virus, they are going to get zip," Lamberson said.

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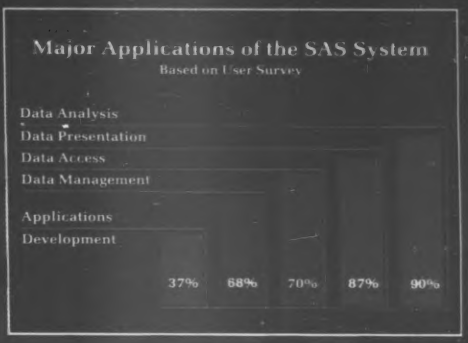

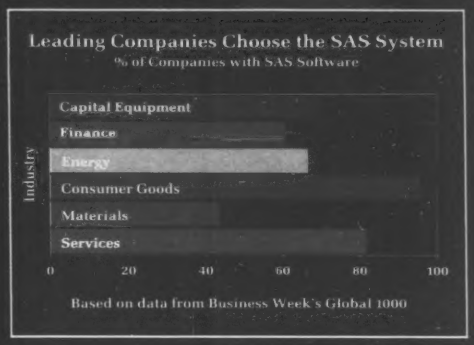

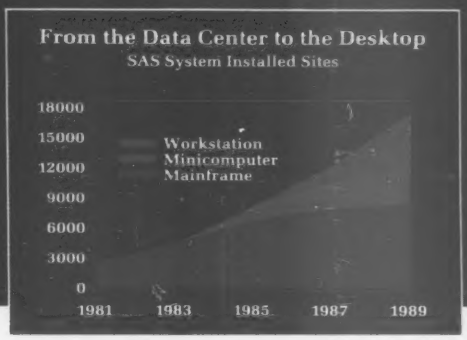

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Delivering effective speeches

A good speaking manner can boost a career, but it may mean homework

BY JILL VITIELLO
SPECIAL TO CW

As computers move further into the mainstream of business and daily life, information systems professionals increasingly find themselves making presentations to colleagues or speaking at other types of gatherings.

Communicating clearly with other people adds to a manager's visibility and can be key to moving up the IS career ladder. If you're like most people in the field, however, your training didn't include a course in public speaking — but that's no reason to turn down a chance to give a speech. There are five steps you can take to help ensure that you'll get a positive response.

Step 1: Plan your speech. If you are asked to speak on a subject of your choosing or you want to promote yourself as a speaker, you'll have to come up with a topic. Stick to the advice of school composition teachers and talk about what you know.

Where do you begin? Look for a fresh angle. One project manager who was asked to speak about local-area networks developed a speech that showed his listeners how they could implement a new cost-effective LAN configuration he had installed.

Before writing, gather data to support your points. You might search periodical indexes at public libraries, your company's archive of trade journals or any of the numerous databases that retrieve articles.

Look for statistics that will buttress your main point and quotations and anecdotes that will add punch and color. Try *The Little Brown Book of Anecdotes*, edited by Clifton Fadiman and published by Little Brown & Co., and *The International Thesaurus of Quotations*, compiled by Rhoda Thomas Tripp and published by Harper & Row.

Don't forget to draw on personal experiences, too, but beware of making yourself the center of the speech.

Step 2: Write the speech. You may choose to draft a detailed outline or the full text. With either approach, spend plenty of time on the job. This is where you organize your points and determine the quotations and statistics you'll use to support them.

Many speakers prefer to work from an outline, especially if they plan to use visual aids. They feel it's more spontaneous and natural. Don't make the mistake of "winging it" if you're not ready to do so. In an attempt to sound casual, you may come off sounding awkward and unprepared.

Get right into your topic. Follow that old chestnut: Tell the audience what you're going to tell them, tell them, and then summarize by telling them what you told them. To grasp your point, audiences must hear it several times.

Spoken language is vastly different from written language. Use fragments rather than long, complex sentences. Repeat words or phrases for emphasis. Rely on vigorous verbs and concrete nouns. Find ways to use "word pictures" that help your listeners envision what you are saying.

Practicing your speech is essential. Simulate the actual setting. Stand up, keep your hands relaxed at your sides and your feet slightly apart. Put your head up and speak clearly.

For a guide to the preparation and presentation of speeches, try *How to Write and Give a Speech* by Joan Detz, published by St. Martin's Press.

Step 3: Create a comprehensive cover sheet. A cover sheet can help you plan for a specific presentation. On it, note the date, time and location of your speech. Knowing the hour might tell you something about how alert your audience will be. As an out-of-town speaker, try to get a sense of the city in which you'll appear.

Describe the program, too. Note who precedes and follows you and indicate how the program will flow. For a business presentation, you may want to note whether spouses will attend.

Step 4: Evaluate your audience. Tailor your remarks to meet the expectations of your audience. You might, for example, ask a contact about current goals of the group and tie in a correlating call to action.

Also customize your speech with examples. One retired executive traveling the lecture circuit always gives the same basic speech, but listeners would never know it. By peppering the standard talk with examples appropriate for a given group, he impresses his listeners with his knowledge of their concerns.

One word of caution: When addressing a general audience, avoid the use of computer jargon and acronyms. Audiences are more impressed with a speaker's ability to make the complex comprehensible than with a command of arcane terms.

Step 5: Check on the room setup. The arrangement of the room in which you are speaking might force you to tailor your presentation and affect the equipment you'll need.

One telecommunications analyst who delivered similar remarks to two groups was guided by the size of the audience and the room. The first meeting was held around a conference table, so the analyst spoke informally and used an overhead projector on which he could draw. At the second meeting, held in a packed lecture hall, he read from a script and augmented his presentation with prepared slides.

Now, relax and have fun. As you step up to the lectern and look out over the crowd, take a deep breath and smile before beginning. Harness that spasm of nervousness and turn it into natural energy. You're on the program because people are interested in what you have to say. There is no high quite like it.

DON'T MAKE THE mistake of "winging it" if you're not ready to do so. In an attempt to sound casual, you may come off sounding awkward and unprepared.

Vitiello is a speech writer and freelance journalist based in East Brunswick, N.J.

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Due to systems expansion we have an immediate need for an experienced professional with a minimum of 4-5 years experience in logical/physical database design, database performance and turning in major development projects. Skilled in problem solving and efficiency techniques. Knowledge of IDMS DC-COBOL and ADS/O is desired; CICS is a plus. Must be familiar with all IDMS utilities and with the MVS operating environment. Good verbal skills with the ability to train development staff in developing and implementing efficient database systems.

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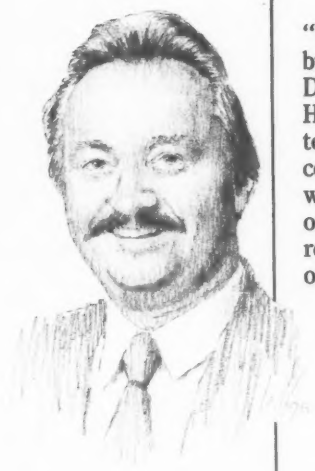

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MARKETPLACE

Turn old computers into cash

Usable or sellable equipment may be gathering dust in your storerooms

BY MICHAEL ERBSCHLOE
SPECIAL TO CW

As companies invest in more and more information technology, the volume of computer and peripheral equipment sitting in closets and on storeroom shelves is growing as well. All too often, equipment that is replaced or no longer needed is shoved into a corner to collect dust.

Meanwhile, some computing needs are not being met because companies do not have the necessary resources. Information systems people become discouraged because they want to improve systems or networks, but they can't get requisitions approved.

However, you can transform idle and space-consuming hardware into usable equipment or resources through better management. To do so, you must impose greater discipline in the management of computing assets at both the corporate and operational levels.

To take advantage of these potential resources, the first thing to do is find out what equipment you possess but are not using. Take an inventory, starting with the closets and storeroom shelves. Centralize all of these stashes into one depository.

Next, find out what you are using and where it is located. Again, take an inventory. It will show whether there is any redundant or unnecessary equipment.

Now determine if there is an in-house need for any of the surplus gear. Compare requisitions for computers or peripheral devices with the inventory of discarded items. You should take this step with every requisition for new equipment. If you find a match, require the operating unit that is requesting the new goods to first attempt using equipment from your surplus center.

A second way of matching unused equipment with the needs of users is to circulate a list of surplus items among departments or business units. You should send out an updated list on a monthly or quarterly basis depending on the level of purchasing activity.

The next phase of the process is to decide what to do with the stuff you will never use. You will probably find that there is a lot of it. There are several courses of action that might turn the unusable items into cash or other valuable assets.

It is probably easiest to dispose of unwanted gear locally. You can start with your own company: One method is to let employees buy surplus goods. Taking this route lets you to quickly and easily discard the unwanted items while generating

resources that can help pay for some of the equipment that you need. It can be particularly helpful when you are upgrading personal computers or printers throughout the organization.

By providing workers with an opportunity to buy the hardware at competitive prices, this tactic can improve relations with them. One alternative is to establish such a program to provide perks for valuable workers.

Another means of disposing of equipment is to circulate your list of surplus goods among local user groups and professional associations. This list can serve as a low-cost way to advertise the surplus wares. It can also help your employees contribute to the professional groups to which they belong. There may be side benefits — good contacts in these networks can help you recruit workers, check references of consultants or get objective information on vendors.

Try advertising in the media, too. Some of the best places are the local computer publications found in most large and medium-size cities. Some of these publications are profit-oriented and want something substantial in return for providing ad space. You may try to trade some of the equipment you want to get rid of for some of this space.

Other publications are supported by local user groups or educational organizations. Their ad space is usually cheaper, and their circulation tends to be among users that not only recognize a bargain but are looking for one.

Mail your list to other nonprofit organizations; they are usually looking for good deals. They are also often on tight budgets, so they may not be able to pay you much. If they can't, selling the equipment to them at bargain prices or just giving it to them could generate goodwill for your company. If the other tricks for disposing of unusable equipment aren't consistent with your organization's management philosophy, this method might still be a good alternative.

You can also mail your list of available hardware to small dealers or recyclers of used computer equipment. Many of these outfits are good at selling such goods. The people who run the businesses usually know potential buyers all over the country. You may also find that used computer dealers have some equipment that can help you meet your current needs at reasonable prices.

Finally, if none of these alternatives seem viable, local scrap dealers may be interested in your computer equipment, especially the oldest models, which often contain gold and other precious metals in their circuitry. Dealers may not offer much for this gear, but they will haul it away.

Erbschloe is executive editor at Computer Economics, Inc. in Carlsbad, Calif.

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The BoCoEx index on used computers

Closing prices report for the week ending April 13, 1990

	Closing price	Recent high	Recent low
IBM PC Model 176	$450	$550	$400
XT Model 086	$630	$825	$600
XT Model 089	$800	$900	$600
AT Model 099	$1,050	$1,600	$1,000
AT Model 239	$1,200	$1,700	$1,200
AT Model 339	$1,250	$1,350	$1,000
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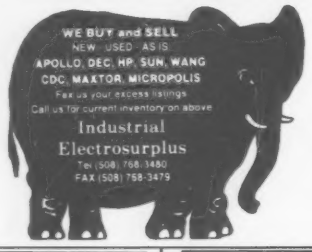

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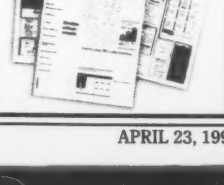

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Dealing with your consultant

Handling training advisors can seem like pulling teeth — your teeth

BY EDMOND DROUIN
SPECIAL TO CW

Have you ever hired a training consultant who seemed like a dentist?

Think about it for a minute. What happens when you go to a dentist? After you're seated, he asks you to open wide and then probes around while prattling along and doing unpleasant things to you.

Why do we let dentists do this to us? We allow it because we believe they are good for us. We believe they know what they are doing, so we try to be brave and bear it. Perhaps, too, the high price we are paying helps persuade us to submit respectfully.

Now think of the last training consultant you hired. Did he ask you to open up your organization to him while he rattled on about current trends, strategic needs, synergistic possibilities and searches for excellence? Did the consultant then do things which you found unpleasant?

Why do some managers tolerate consultants who work in this manner? The managers believe that the consultants can be good for them and that the consultants know what they are doing. Because the managers are paying a lot, they feel obliged to listen.

If we are not careful, we let dentists and consultants become responsible for our dental and organizational health. However, consultants are not dentists. Dentists are usually well-trained, skilled and fully licensed. Training consultants may or may not be skilled and experienced.

Recently, a senior executive empowered some training consultants to forge improvements in managerial development for a large group of my firm's information systems managers.

These consultants quickly adopted the attitude that they knew what was wrong with our managers, and they decided what to do to fix it. Because they had the blind trust of the executive, they were free to do whatever they wanted. They dragged out some old, tired and not-so-true techniques that they had in hand and with which they felt comfortable. However, these techniques — outdated team-building models, for example — failed to meet our needs. As a result, the consultants missed opportunities for improvement and offered trivial programs, and managers resisted being manipulated.

We let the training consultants assume responsibility for our managerial health, and by yielding control to inept consultants, we turned our dedicated managers off to possibilities for genuine improvement.

How can you properly manage consultants? There are ways to control them so that you can achieve your goals rather than fall in line with a consultant's efforts to further his own aims.

You should begin with a clear definition of your needs, which may be stated in terms of learning objectives. You may already know your needs or have a consultant help you establish them.

Next, you should define a specific set of deliverables for training programs. These will form the basis of the contract you negotiate with the consultant.

During the contracting stage, you need to explain your values. You also need to learn the consultant's values and agree on ways to ensure that he will behave in accordance with you.

You can negotiate the price of the contract more easily if you ask the consultant to submit various proposals, each with a different cost. The details of what you get for which price can help you decide what to buy and what to do yourself. You can then make the best counteroffers and obtain the best deal.

In drawing up the contract or service-level agreement, you should spell out the conditions of both parties. These contracts must be fair to both sides. Consultants have legitimate needs and concerns, and a contract should help forge an effective partnership in which the partners respect each other's needs.

Once the contract is in place, you must monitor the consultant's performance just as you monitor that of employees. There are certain deliverables due on specific dates. You must control the quality of the design and materials. It is a good idea to attend the first offering of a new program to be sure it works as intended. Meeting with students at the end of the course will allow you to obtain even better feedback on quality and usefulness than any evaluation form you could devise.

The key to succeeding with consultants is to keep control in your hands. You have an obligation to your organization — to see that it is served well by the consultants you hire. You can control the needs assessment, design, conditions, deliverables and, finally, the quality.

If you undertake these measures, consultants will want to work with you; they like clients who set clear expectations just as much as you like consultants who meet them.

You may get drilled by your dentist, but I hope these steps will help you avoid getting drilled by your training consultants.

Drouin is director of DP Education & Training at Liberty Mutual Insurance Co. in Portsmouth, N.H.

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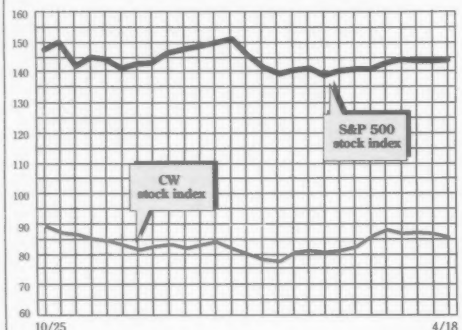
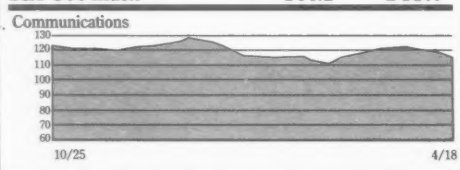
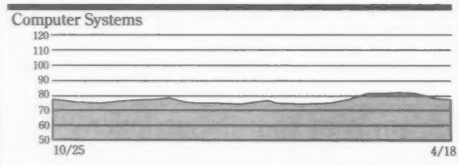
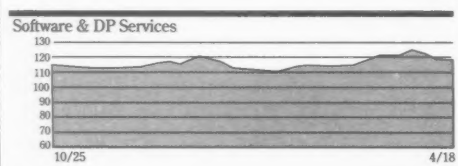
STOCK TRADING INDEX

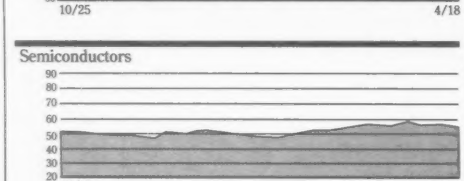


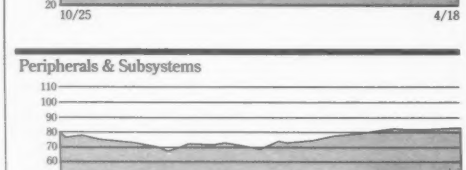
Indexes	Last Week	This Week
Communications	119.7	116.5
Computer Systems	79.8	79.7
Software & DP Services	119.8	119.5
Semiconductors	56.9	55.7
Peripherals & Subsystems	81.6*	82.5
Leasing Companies	97.2	96.7
Composite Index	86.5*	85.9
S&P 500 Index	144.2	143.7

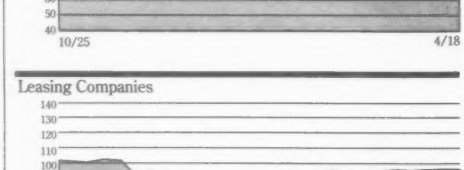












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CLOSING PRICES WEDNESDAY, APRIL 18, 1990

Communications and Network Services

EXCH		52-WEEK RANGE		PRICE CLOSE APRIL 18, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN INFO TECHS CORP	68	53	60.625	-0.8	-1.2
Q	ANDREW CORP	26	18	23.75	-0.5	-2.1
Q	ARTEL COMM CORP	10	3	5.875	-2.3	-27.7
N	AT&T	47	33	41	-0.6	-1.5
Q	AVANTEK INC	7	2	2.875	-0.6	-16.4
N	AYDIN CORP	21	14	16.125	0.3	1.6
N	BELL ATLANTIC CORP	114	78	97	2.1	2.2
N	BELLSOUTH CORP	59	43	54.75	-0.5	-0.9
Q	COMPRESSION LABS INC	15	5	11.875	0.5	4.4
Q	CONTEL CORP	37	25	26.875	-1.9	-6.5
Q	DATA SWITCH CORP	5	2	2.125	0.0	0.0
Q	DIGITAL COMM ASSOC	25	17	19.75	-0.5	-2.5
Q	DYNATECH CORP	21	15	15.25	-0.4	-2.4
Q	FIBRONICS INTNL INC	8	4	6.875	-0.4	-5.2
Q	GANDALF TECHNOLOGIES	7	3	2.688	-0.1	-2.3
N	GENERAL DATACOMM INDS	7	4	3.75	-0.1	-3.2
N	GTE CORP	72	47	64.375	-1.1	-1.7
Q	INFOTRON SYS CORP	13	5	5.25	-0.3	-4.5
N	ITT CORP	65	52	52.625	-1.4	-2.5
N	M A COM INC	9	3	3.625	-0.3	-8.5
Q	MCI COMMUNICATIONS CORP	49	31	35.125	-1.0	-2.8
N	NETWORK EQUIP TECH INC	34	15	16.75	0.4	2.3
Q	NETWORK SYS CORP	13	7	10.875	0.1	1.2
N	NORTHERN TELECOM LTD	26	15	23.625	-2.0	-7.8
Q	NOVELL INC	45	24	39	0.3	0.6
N	NYNEX CORP	92	72	83.25	0.1	0.2
N	PACIFIC TELESIS GROUP	52	37	44.75	-0.8	-1.6
A	PENRIL CORP	9	4	7.125	0.0	0.0
N	SCIENTIFIC ATLANTA INC	25	15	21.75	-0.1	-0.6
N	SOUTHWESTERN BELL CORP	65	46	56.875	-1.3	-2.2
Q	3 COM CORP	29	10	13.375	0.4	2.9
N	U S WEST INC	81	63	72.75	-3.3	-4.3

Computer Systems

EXCH		52-WEEK RANGE		PRICE CLOSE APRIL 18, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLIANT COMPUTER SYS	8	4	6.875	0.3	3.8
Q	ALPHA MICROSYSTEMS	8	3	3.5	0.1	3.7
Q	ALTOS COMPUTER SYS	8	5	5.625	-0.5	-8.2
A	AMDAHL CORP	23	11	14.625	-0.3	-1.7
Q	APPLE COMPUTER INC	50	32	43.25	0.8	1.8
Q	AST RESH INC	24	7	23.25	3.6	18.5
N	BOLT BERANEK & NEWMAN	9	5	5	-0.4	-7.0
N	COMPAQ COMPUTER CORP	113	73	99.5	0.9	0.9
N	COMMODORE INTNL	20	7	7.875	0.6	8.6
N	CONTROL DATA CORP	23	16	20.25	0.3	1.3
N	CRAY RESH INC	58	31	45.5	-1.9	-4.0
Q	DAISY SYS CORP	5	0	0.531	0.0	0.0
N	DATA GEN CORP	19	8	8.75	0.1	1.4
N	DATAPOINT CORP	6	2	3	0.3	9.1
Q	DELL COMPUTER CORP	9	5	8.125	0.5	6.6
N	DIGITAL EQUIP CORP	103	70	80	-3.9	-4.6
N	FLOATING POINT SYS INC	4	1	0.938	-0.2	-16.6
N	HARRIS CORP	40	28	33	0.5	1.5
N	HEWLETT PACKARD CO	58	40	43.5	-1.3	-2.8
N	HONEYWELL INC	92	71	89.25	0.0	0.0
N	IBM	119	93	109.875	3.5	3.3
Q	INFORMATION INTL INC	16	12	11.5	-0.3	-2.1
Q	IPL SYS INC	12	5	12	1.0	9.1
N	MAI BASIC FOUR INC	8	2	3	0.0	0.0
N	MATSUSHITA ELEC INDL LTD	184	123	136.375	-8.0	-5.5
Q	MENTOR GRAPHICS CORP	22	14	19.5	0.3	1.3
N	NBI INC	3	0	0.281	0.0	-10.2
N	NCR CORP	72	53	63.75	-6.1	-8.8
Q	PYRAMID TECHNOLOGY	32	9	32	3.5	12.3
Q	SEQUENT COMP SYS INC	28	11	26.375	-0.1	-0.5
Q	SHAREBASE CORP	3	0	0.422	0.0	12.5
Q	SUN MICROSYSTEM INC	25	13	22.75	-0.8	-3.2
Q	SYMBOLICS INC	2	0	0.563	0.0	0.0
N	TANDEM COMPUTERS INC	30	16	24.125	0.6	2.7
N	TANDY CORP	49	32	32.5	-1.1	-3.3
N	ULTIMATE CORP	12	6	6.125	0.3	4.3
N	UNISYS CORP	28	12	14.625	-0.4	-2.5
A	WANG LABS INC	9	4	5	-0.5	-9.1

Software & DP Services

EXCH		52-WEEK RANGE		PRICE CLOSE APRIL 18, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	AMERICAN MGMT SYS INC	16	11	13.5	0.4	2.9
Q	AMERICAN SOFTWARE INC	24	14	21	0.3	1.2
N	ANACOMP INC	8	3	2.625	-0.1	-4.5
Q	ANALYSTS INTL CORP	20	13	18	0.0	0.0
Q	ASHTON TATE	24	9	11.875	-0.4	-3.1
Q	ASK COMPUTER SYS INC	16	7	8	-0.8	-8.6
N	AUTO DATA PROCESSING	55	36	53	-0.4	-0.7
Q	AUTODESK INC	50	32	45.5	-0.8	-1.8
Q	BMC SOFTWARE INC	26	12	24.75	1.5	6.5
N	BUSINESSLAND INC	14	7	9.5	0.6	7.0
Q	COGNOS INC	8	4	5.25	-0.2	-3.5
N	COMPUTER ASSOC INTL INC	22	11	13.875	0.0	0.0
Q	COMPUTER HORIZONS CORP	13	7	12.125	-0.1	-1.0
N	COMPUTER SCIENCES CORP	59	40	41.5	-0.4	-0.9
N	COMPUTER TASK GROUP INC	15	9	11	0.0	0.0
Q	COMSHARE INC	44	27	37.25	1.0	2.8
Q	CORPORATE SOFTWARE	16	8	12.5	0.8	6.4
N	GENERAL MTRS (CLS E)	32	23	31.125	0.1	0.4
Q	HOGAN SYS INC	7	4	4.188	-0.2	-4.3
Q	INFORMIX CORP	17	8	11.75	0.1	1.1
Q	INTELLICORP INC	7	3	6.125	0.1	2.1
Q	LEGENT CORP	32	20	21	0.0	0.0
Q	LOTUS DEV CORP	38	21	33.25	0.5	1.5
Q	MICROSOFT CORP	63	26	60.625	-60.4	-49.9
Q	NATIONAL DATA CORP	35	23	24.75	0.3	1.0
N	ON LINE SOFTWARE INTL INC	11	6	8.625	-0.1	-1.4
Q	ORACLE SYS CORP	28	13	16.5	0.1	0.8
N	PANSOPHIC SYS INC	19	12	16	0.1	0.8
Q	PHOENIX TECHNOLOGIES INC	17	2	3.125	0.5	19.0
Q	POLICY MGMT SYS CORP	38	25	36	0.8	2.2
Q	PROGRAMMING & SYS INC	23	16	21.75	0.8	3.6
Q	RELATIONAL TECH INC	12	5	8.125	0.6	8.3
N	REYNOLDS & REYNOLDS CO	34	19	21	0.8	3.7
Q	SAGE SOFTWARE INC	13	7	12.625	0.8	6.3
Q	SEI CORP	20	15	18.625	0.4	2.1
Q	SHARED MED SYS CORP	19	12	13.125	0.1	1.0
Q	SOFTWARE PUBG CORP	25	13	21.5	-0.6	-2.8
Q	SUNGARD DATA SYS INC	26	13	21.25	-0.5	-2.3
Q	SYSTEMATICS INC	44	30	43.75	-0.3	-0.6
N	SYSTEM CENTER INC	26	18	22	1.0	4.8
N	SYS. SOFT INC	29	13	26	-1.3	-4.6
Q	WORDSTAR	3	1	0.938	0.0	0.0

Semiconductors

EXCH		52-WEEK RANGE		PRICE CLOSE APRIL 18, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADV MICRO DEVICES INC	11	7	8.75	-0.1	-1.4
N	ANALOG DEVICES INC	12	7	7.375	0.3	3.5
Q	ANALOGIC CORP	11	9	9.625	0.3	2.7
Q	CHIPS & TECHNOLOGIES INC	28	15	17.5	-1.3	-6.7
Q	INTEL CORP	44	28	41	-1.8	-4.1
Q	MICRON TECHNOLOGY INC	26	7	11.5	-0.4	-3.2
N	MOTOROLA INC	70	40	67.875	-1.1	-1.6
N	NATL SEMICONDUCTOR	9	5	6.875	-0.9	-11.3
N	TEXAS INSTRS INC	47	28	36.375	-1.0	-2.7
A	WESTERN DIGITAL CORP	13	6	12.625	0.3	2.0

Peripherals

EXCH		52-WEEK RANGE		PRICE CLOSE APRIL 18, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLOY COMP	3	1	1.25	-0.1	-9.1
N	AM INTL INC	6	3	2.5	-0.3	-9.1
Q	AUTO TROL TECH CORP	6	2	2.5	-0.1	-4.8
Q	BANCTEC INC	20	11	18.75	0.6	3.4
Q	CIPHER DATA PRODS INC	10	4	8.125	0.1	1.6
A	COGNITRONICS CORP	8	3	4.875	-0.5	-9.3
Q	CONNER PERIPHERALS	21	9	20	1.5	8.1
A	DATAPRODUCTS CORP	17	5	9.75	3.5	56.0
A	DATARAM CORP	15	8	14.375	-0.1	-0.9
N	EASTMAN KODAK CO	52	37	39.625	-0.3	-0.6
N	E M C CORP MASS	7	3	5.875	-0.3	-4.1
Q	EMULEX CORP	12	4	5.125	0.4	7.9
Q	EVANS & SUTHERLAND	30	17	27	0.0	0.0
Q	ICOT CORP	3	1	1.5	0.0	0.0
Q	INTERLEAF INC	10	5	5.875	0.0	0.0
Q	IOMEGA CORP	6	2	4.188	-0.9	-18.3
Q	LEE DATA CORP	4	1	1.625	-0.3	-13.3
Q	MASSTOR SYS CORP	4	1	1.313	-0.3	-16.0
Q	MAXTOR CORP	14	7	13.625	-0.1	-0.9
Q	MICROPOLIS CORP	7	3	4.75	0.5	11.8
N	MINNESOTA MNG & MFG CO	85	68	82.5	0.3	0.3
Q	PERSONAL COMP PRODUCTS INC	6	4	4.063	0.0	0.0
Q	PRINTRONIX INC	12	7	12.375	0.0	0.0
N	QMS INC	15	7	13.75	-0.3	-1.8
Q	QUANTUM CORP	17	6	14.25	0.3	1.8
N	RECOGNITION EQUIP INC	13	5	5.125	-0.1	-2.4
Q	REXON INC	9	6	8.125	-0.1	-1.5
Q	SEAGATE TECHNOLOGY	20	10	15.625	-0.4	-2.3
N	STORAGE TECH CORP	25	9	22.5	-0.3	-1.1
Q	TANDON CORP	2	0	2	0.3	14.3
N	TEKTRONIX INC	24	13	13	-0.1	-1.0
Q	TELEVIDEO SYS INC	1	0	0.219	0.0	0.0
N	XEROX CORP	69	50	54.5	-0.1	-0.2

Leasing Companies

EXCH		52-WEEK RANGE		PRICE CLOSE APRIL 18, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	AMPLICON INC	115	8	8	-1.5	-15.8
N	CAPITAL ASSOC INTNL INC	9	3	4.125	0.1	3.1
N	COMDISCO INC	34	22	28.5	0.9	3.4
Q	CONTINENTAL INFO SYS	2	0	0.281	0.0	5.6
Q	LDI CORPORATION	18	13	15.25	-0.4	-2.4
Q	PHOENIX AMERN INC	5	3	3.375	-0.3	-8.9
Q	SELECTERM INC	9	6	5.5	-0.4	-6.4

EXCH: N—NEW YORK; A—AMERICAN; Q—NATIONAL

* The Peripherals & Subsystems category was incorrectly listed last week as closing at 120.4 instead of 81.6. The Composite Index should have been listed as 86.5, not 93.4.

False profits

Investors show a lack of faith in high-tech earnings reports

Odds are that good earnings reports kick stock prices up, while bad statements drive them down, but there's no sure bet in the technology arena (see story page 6).

Take Apple Computer, Inc. After reporting a giant 134% profit surge, its stock lost 3½ points last week to 40¼. Digital Equipment Corp. was another surprise, revealing low quarterly figures, only to see its stock shoot up 2⅛ points. DEC ended the week at 82⅛, down ⅛ of a point. Microsoft Corp., which reported a hefty increase in profits and issued a 2-for-1 split, watched its stock slip 1¼ points to 59½. IBM's earnings were also up, but its stock still fell 1¾ to 109⅛.

Elsewhere, movement was more predictable. Ashton-Tate put out a gloomy earnings statement and then lost ½ of a point to close at 11⅝.

On the positive side of earnings news, AST Research climbed to a new 52-week high, up 2 points to 22¾. After auspicious reports from both companies, Tandem Computers, Inc. collected 1⅛ points to end at 24½, and Pyramid Technology rose ¾ of a point to 30¾.

In other action, Texas Instruments, Inc. and Intel Corp. each lost 2¼ points to finish at 35½ and 40¼, respectively.

KIM S. NASH

IBM peer-to-peer under fire

BY ELISABETH HORWITT
CW STAFF

RYE, N.Y. — Users that recently began installing the first peer-to-peer networks over IBM front-end processors are learning the hard way that hierarchical Systems Network Architecture (SNA) and peer-based communications mix like oil and vinegar.

For two years now, IBM has been shipping Network Control Program (NCP) and VTAM software that supports its physical unit Type 2.1 (T2.1) protocol, allowing its front-end processors to act as switchboards for peer networks of personal computers and midrange processors.

While T2.1 is a built-in capability in OS/2 Extended Edition, OS/400 and System/38, the protocol has primarily been used until now by small- to medium-size Application System/400 shops, said Donald Czubeck, president of Gen2 Ventures, a Saratoga, Calif., consulting firm.

Cost savings

What is now drawing mainframe shops to T2.1 is the promise of significant telecommunications cost savings.

About 18 months ago, the Missouri Department of Corrections began interconnecting its regional AS/400 and System/36 sites using peer-to-peer links on the front end of a mainframe that it shares with the Missouri Highway Patrol. Because those sites were already linked to the front end over dial-up lines in order to access applications on the Highway Patrol's hosts, the Department of Corrections was saved from having to install "cost-prohibitive" point-to-point links between its sites, spokesman Ted May said.

Three months ago, Cruisematch, a cruise reservation subsidiary of Royal Caribbean, started using a peer-to-peer SNA service that IBM Information Network officially released this month. Travel agents on Personal System/2 Model 50s do the initial processing of client cruise requests locally and then use the service to interact with Cruisematch's AS/400 in order to get cruise availability and make reservations, said Cruisematch Vice-President of Operations Brad Carter.

However, while some users expressed satisfaction with their installations thus far, major gaps remaining in IBM's peer-to-peer SNA strategy have caused unpleasant surprises for others.

Perhaps the most important omission that IBM is now addressing — but not fast enough to save some early users grief — is the need to reallocate responsibility for functions such as security and network control, which the host traditionally handles in a hierarchical SNA system.

For example, both Motorola and The Travelers Corp. ran into problems because IBM's Advanced Program-to-Program Communication/PC cannot control the rate at which an MS-DOS microcomputer communicates over a peer-to-peer network.

Overload

At Motorola, the PCs "came in over a 4M bit/sec. Token-Ring to the NCP," overwhelmed its buffers "and blew it out in seconds," said Joe Mohen, vice-president at Garden City, N.Y., consultancy Teleprocessing Connection. Mohen was involved in Motorola's installation.

When Travelers set up PC-to-PC communications via its front end, it started having network degradation problems, because the NCP "was at the mercy" of applications that could send data at whatever rates they wished, said Steve Simon, SNA engineering project manager.

IBM has addressed the above problem with Adaptive Pacing, a "relatively new feature that is now part of T2.1 support, that looks at traffic on the link and adjusts the pacing window as the NCP becomes overloaded," said Rick McGee, IBM's manager of communications systems architecture and development.

Travelers identified another PC peer-to-peer problem by accident, Simon said. Information systems set up what it thought was a 3270 gateway to the host for PS/2s with OS/2 Extended on Token-Ring local-area networks. IBM's documentation did not mention that OS/2 systems support T2.1, so IS only realized that the PS/2s were actually accessing the host as peers when the NCP network tables filled up, Simon said.

IBM

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Guide, Inc., an IBM large systems user group.

"Guide got a response [from IBM], and the indication is that they are in the process of formalizing this," Farber said.

IBM declined to comment, but users and observers said the automated operations blueprint has been discussed at industry conferences, user group meetings and IBM-sponsored events.

IBM executives discussed a strategy for operations automation at an Enterprise Systems customer briefing in New York earlier this year, said Howard Taylor, an assistant vice-president at the Geoserve Wholesale Computer Services division of Manufacturers Hanover Trust.

"This has been leaked out at Guide and IBM road shows," Taylor said. "It hasn't been made clear. No products have been mentioned, no functional specifications."

Terry Lowder, vice-president of technology research at Banc One Services Corp., said he was informed by his own sources close to IBM that a blueprint will eventually be made public.

"I essentially understand the framework," Lowder said. "It's similar to AD/Cycle; it's the same kind of process."

Like AD/Cycle and SAA, users expect the operations automation structure to roll out in pieces over the next several years. It addresses a complex area of IS, since data center operations span such tasks as tape management, console operation and the monitoring of the scores of applications and subsystems.

Additionally, some users suspect that IBM's Netview will have a key role and suggest that IBM has far to go before it becomes an efficient tool for operations management. Finally, users said they believe IBM will work with other vendors in an AD/Cycle fashion and that these deals have not been ironed out.

"One of the things that has to be worked out is the delicate negotiations between IBM and other vendors," Lowder said. "I don't believe all the bases have been touched yet."

Jeff Schulman, an analyst at Gartner Group, Inc., said it was unlikely that IBM will make a big splash with this. "They've already gone public at Guide and Share," he said. "It's a long-haul thing, so we'll see more from them along those lines."

Taylor said he suspects this blueprint is an offshoot of an IBM automated operations project that he was involved with a year ago. At that time, IBM executives spoke of a concept called System Management Program Structure, which was "a philosophy, a direction that IBM was describing for integration of operations, problem management and configuration," Taylor said.

Mario Morino, chairman of the executive committee at Legent Corp., which sells automation tools, said IBM has an internal project called System Managed Process Structure that is intended as a master plan for data center operations.

Farber suggested that IBM may be ready to deliver its direction statement in September. The company has agreed to speak at the Association For Computer Operations Management conference and has given hints that a blueprint will be revealed at that time.

Slow to automate

If IBM makes data center automation its next grand plan, some observers say that will not be soon enough.

Operations automation has spawned dozens of products, from the utilities sold by such software companies as Candle Corp. and Legent Corp. to hardware such as the automated tape library from Storage Technology Corp.

But the major missing piece continues to be a single, consistent approach that unites the facets of data center operations.

"Our feeling is [IBM] has been slow to respond with this," said Arnold Farber, president of Farber/LaChance, Inc., a consulting firm specializing in data center automation. "I don't feel like they are doing us this big favor. This is long overdue. We've been working with them through the Guide unattended operations project since 1983."

Users contacted last week said a framework to handle the complex mix of data center tasks would be welcome.

Howard Taylor said all the data associated with all operations activities is estimated at 30G bytes.

"The operating system, the parameters and all the data it produces — it turns out to be quite a bit of data," Taylor said. "We don't have very many good tools to manipulate that data."

Novell users continue to await merger fallout

BY JIM NASH
CW STAFF

Many Novell Netware users, stunned by the proposed merger of Novell, Inc. and Lotus Development Corp., remain wary in the face of industry aftershocks.

Novell shareholders initially reacted negatively to the proposed merger, and the law firm Morris & Rosenthal in Wilmington, Del., filed a lawsuit on behalf of shareholders Stephen Maskaleris and Herbert Podell seeking to halt the deal.

Additionally, reports that Orem, Utah-based Wordperfect Corp.'s customer-service operations would be joined to Novell's and Lotus' service departments have been denied. Wordperfect company spokesman Paul Eddington said his company and Lotus have agreed to share only information with one another.

In the face of all this, even some hard-core Netware supporters are uncertain about Novell's short-term safety and long-term direction.

At Miles, Inc. in Elkhart, Ind., telecommunications specialist Karen Soskin said she sees a near-term danger in Novell executives becoming preoccupied with "galactic issues" of legal defenses, merger negotiations and combined strategies. Otherwise, Soskin said she is enthusiastic about the proposal.

"This may help ensure Novell's longevity. It's going to pave the way for its uniqueness and inventiveness," Soskin said, adding that one synergistic result could be "a well-networked" version of Lotus 1-2-3.

Dave Hoisve, project director at the University of Utah's computer center, said he is concerned that Novell will lose its willingness to deal competitively with schools.

"We are nervous, given our very close relationship with Novell," he explained. "Lotus is not known for strong relationships with colleges and universities, and that concerns me."

"We have never loaded a Lotus spreadsheet program in student computing because we were never able to work out a competitive agreement" with Lotus, Hoisve added.

On the other hand, he said, if the merger goes through, it might produce spreadsheets that could be shared between several employees, with certain sections of the program held off-limits to different users.

Beef up support

What is more, Hoisve added, Lotus could beef up what he sees as a key Novell weakness: poor technical support. He pointed to the difficulties users have in "getting a real, live human" on the line to discuss problems, failures and viruses.

Greg Scott, network manager for Oregon State University's business college, said he is "apprehensive" about the Lotus-/Novell events.

"Netware is the crown jewel of my whole program," Scott said, adding that he is concerned about the speed at which Novell will move on new products if the merger is completed.

NEWS SHORTS

Comdisco feels mainframe pinch

Comdisco, Inc. shares took a dive last Thursday, losing a third of their value, down $8.50 to $18, on word that the computer-equipment reseller expected earnings in the March quarter to fall 30% from a year ago. The Rosemont, Ill.-based leasing company, which deals primarily in IBM hardware, said its customers are reaching the end of a six-year life cycle for mainframes and that many of these customers are moving to shorter-term operating leases rather than sales-type leases. Chairman Kenneth Pontikes said Comdisco would reduce its dependence on IBM leases.

Japanese score patent edge

Three Japanese high-tech companies, Hitachi Ltd., Toshiba Corp. and Canon, Inc., received the most U.S. patents in fiscal 1989, according to the Top 10 list released last week by the U.S. Patent and Trademark Office. Siemens AG in West Germany placed eighth, and IBM placed ninth.

Informix strikes deal with Lockheed

Informix Software, Inc. said last week it had reached an agreement with a Lockheed Corp. subsidiary to jointly develop and market imaging software using Informix's Online multimedia database management system. Lockheed Integrated Solutions Co. in Fairfax, Va., will customize the imaging applications based on analysis of a customer's electronic handling of images, drawings and documents.

High-tech politics

Len Umina, a marketing executive at Digital Equipment Corp., is hoping to see his name on the November ballot in the race for governor of Massachusetts. Umina, an independent, has lined up a slate of "high-tech" candidates. His platform? The complete computerization of state government, with public access to all information through libraries, schools and home computers.

Sharebase edges toward Teradata

Sharebase Corp. and Teradata Corp.moved a step closer toward a merger last week, signing a definitive agreement for $137 million Teradata to acquire all of $29 million Sharebase's stock for about $6 million. The proposed acquisition, which needs to be approved by Sharebase stockholders in June, is being reviewed by the federal Securities and Exchange Commission . On Feb. 21, Teradata signed a letter of intent to acquire Sharebase, based in Los Gatos, Calif., which had cut its staff in recent years in response to slim operating margins.

Northern Telecom spins fiber web

Northern Telecom, Inc. unveiled at Supercomm '90 last week the first of its Synchronous Optical Network products, announced last October, which are designed to allow telephone company central offices to deploy fiber throughout their networks. The S/DMS Transport Node reportedly provides local and long-distance transport at 2.488G bit/sec. — allowing 450,000 simultaneous telephone conversations on a single fiber — and network management capabilities.

Andersen pacs on DB2

Andersen Consulting last week introduced a version of MAC-PAC, its on-line manufacturing resource planning and control system, for IBM's DB2 environment. MAC-PAC had previously been available for IBM's IMS/DB and DL/I mainframe database products for the IBM ES/9370, 4381 and 3080 platforms. Pricing for the DB2 version is between $10,000 and $90,000 per module, depending on CPU size. Separately, Andersen said it had added an electronic data interchange (EDI) option to its DCS/Logistics and customer service application software. Pricing for EDI Link, which will be available in July, will range between $25,000 and $75,000, depending on the host processor type.

GOP counts on redistricting tool

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The Republican Party has developed a microcomputer-based software package for drawing election districts and, in an unusual twist, is eager to share it with civil rights groups that want to carve out districts largely populated by blacks or Hispanics.

The mapping software allows a mouse-wielding user to reconfigure district boundaries and see the political results almost instantaneously, according to David Winston, director of strategic information systems at the Republican National Committee. He said the software requires an Intel Corp. 80386-based microcomputer running at 25 MHz or 33 MHz with a high-resolution graphics monitor.

The software is a key element in the GOP's 1991 redistricting plan, particularly in the South, where Republicans are growing in strength; however, redistricting will be handled by Democratic-controlled state legislatures.

The party's plan is to help civil rights groups file court suits against the state redistricting plans and force the creation of districts with high concentrations of blacks and Hispanics. The rest of the state is then likely to be more hospitable to Republican candidates who fare poorly in minority communities, according to the GOP strategy.

Republicans and the civil rights groups are counting on a 1986 Supreme Court ruling, *Thornburg* v. *Gingles*, which requires states to create minority districts wherever there is a large and compact minority population that tends to vote as a bloc for a minority candidate.

The GOP is planning to hand its software over to Lawyers for the Republic, a tax-exempt organization in Washington, D.C., which will distribute the software to various public-interest groups, Winston said.

Like several mapping programs now available, the redistricting software will integrate the forthcoming 1990 census data with voter files and a digital map produced by the U.S. Census Bureau [CW, Aug. 28, 1989].

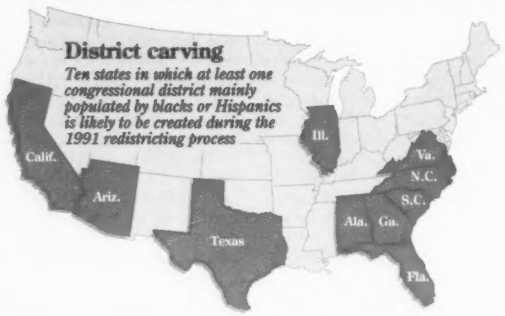
Users can build a district with a mouse "by clicking on a census tract or block you want to include in a district," Winston explained.

The boundaries are redrawn, the population counts are recalculated, and "you keep clicking until you've built your district," he said.

"The big breakthrough here is that it's really fast," said Winston, who said he worried about whether a microcomputer would be fast enough to do a job formerly handled by mainframes.

He said the software will be distributed in late summer at a nominal fee that covers the royalties for programming tools embedded in the software.

Democrats will not be distributing their own software but will work with state legislatures to build redistricting systems and ensure they are made available to outside parties, said Jeffrey M. Wice, a redistricting strategist for the Democratic Party.



DG's Eclipse/MV gets powerful Hitachi chip

BY MARYFRAN JOHNSON
CW STAFF

WESTBORO, Mass. — Data General Corp.'s Eclipse/MV, the computer profiled in *The Soul of a New Machine*, just acquired a new soul in the guise of a high-performance chip manufactured by Hitachi Ltd. in Japan.

As the first microprocessor to contain the entire Eclipse CPU on a single integrated circuit, the chip ushered in a new generation of more powerful and lower priced systems last week with the debut of the Eclipse MV/5500 DC and MV/9500.

The chip was designed by DG and fabricated by Hitachi using its one-micron CMOS process technology. The original MV/8000 required 11 boards for the CPU, and the MV/7800 was the first machine to include multiple CPU chips on a single board.

"This shows how far we can go with the MV architecture," said David Ellenberger, director of Eclipse systems marketing.

Since the release of DG's Unix-based Aviion line of workstations and servers last year, an estimated 35,000 MV system users have watched anxiously for signs the company might abandon its proprietary line.

"These new systems will keep DG users pretty happy," said Dave Card, an analyst at International Data Corp. in Framingham, Mass. "They won't have to write new applications, and this gives the MV a nice, expandable design. There is a lot of life left in that beast."

The MV/5500 DC, at a base price of $53,100, takes its place at the top of DG's lower end offerings and is intended as a desk-side system for office and workgroup environments. It extends the previous top performance of DG's low-end systems from 1.7 million instructions per second (MIPS) to 5 MIPS.

The MV/9500, also a 5-MIPS machine, comes with a new cabinet and more usable space at a base price of $62,000. The new midrange system essentially doubles the performance of the MV/15000 Models 8 and 10 at about half the price.

Users can also upgrade to the 9500 in a $49,500 board swap with older systems.

Company officials claimed that $15 million in first-day orders were already in the books. Among those is one from Port Huron Hospital in Port Huron, Mich., where an MV/9500 will be installed next month by a board swap with the MV/7800 that currently runs the 263-bed hospital's business automation software.

Tom Francis, the hospital's chief information officer, said the MV/9500 won over other midrange competitors — models from Hewlett-Packard Co. and Digital Equipment Corp. — partly because of the electronic mail, word processing and decision-based packages on DG's CEO office software. The DG machine also required no rewiring to install, Francis added.

"Our system now is used by executive management, but this will be going into nursing stations and middle management as well," Francis said. "We'll be spreading that functionality around the hospital."

Access scintillates with a polished Vivid Presentation

BY MAURA J. HARRINGTON
CW STAFF

NATICK, Mass. — Access Technology, Inc. is expected next week to announce and ship a revamped version of its Vivid Presentation Graphics package for Digital Equipment Corp.'s Vaxstation product family.

Version 2.0 of the graphics package will for the first time include support for DEC's All-In-1 office automation system. It will also offer support for additional output devices, an enhanced Help system and the ability to import and export files and clip art from other graphics programs — such as Software Publishing Corp.'s Harvard Graphics — to Vivid via gateway, according to Michael Levinger, Access' vice-president of marketing.

While Levinger called the All-In-1 support a major enhancement, users said that at first glance, they were more impressed with the software's ease of use.

"I think the advantage of Vivid Release 2.0 is that it works [better than] the previous release. The company has cleaned up a lot of little things, like some line problems that we had when attempting to connect boxes together," said David Read, application systems manager for Barnett Bank, in Jacksonville, Fla.

Latest, greatest

Tom Quinn, the technical systems manager at H. B. Fuller Co., a chemical research laboratory based in St. Paul, Minn., cited the ease of use and Help features as his reason for purchasing the software.

"We've looked at a whole bunch of different graphics presentation packages and finally chose Vivid at the last minute because it does everything the others do, but it is much better organized and easy to use," Quinn said.

Quinn said the company will not use Vivid for its All-In-1 integration immediately, for a while, even though it is a main feature of the new release, because Barnett currently does not have the necessary third-party interface software to All-in-1.

Vivid Release 2.0 pricing starts at $800 per Vaxstation but is included in the maintenance fee for current Vivid users, according to Levinger.

CA

CONTINUED FROM PAGE 1

the IBM Application System/400 and Unix operating environments will also be included.

The other principles focus on protecting customers' investments in technology, promoting integration throughout the product line, providing distributed processing capability across multiple environments and facilitating applications portability.

James Kinder, director of database administration at Automatic Data Processing, Inc. in Clifton, N.J., was one of a small group of customers briefed last week by CA. Kinder said he was pleased with the direction CA is taking but would need more details. "The message is good, but the questions are, can they do it, and when will they do it?"

Mark Wasilko, senior vice-president of marketing at CA, declined to go into details but characterized the announcement as a major one for CA, calling it a "nine-plus on a scale of 10."

Ultimately, the firm is hoping to shed its image as a software distributor and be seen as a strategic player, observers said.

"We are dealing with a tiger changing its stripes," said George Schussel, president of Digital Consulting, Inc. in Andover, Mass. "CA has been successful and has grown by selling point products. Now they are struggling and groping with how to take 150 products and piece them together into an architecture." In fact, CA's inventory of products is nearly twice that number.

CA's plan is ambitious and will take several years to unfold. In many ways, CA '90s is analogous to IBM's SAA. Like SAA, the CA '90s strategy will attempt to tie together disparate products and environments. And like the SAA announcement, there will not be a lot of detail up front, according to Schussel, who was also briefed by CA.

CA '90s builds on the Application Construction Environment, CA's application development scheme outlined last February [CW, Feb. 20, 1989]. One source said CA next week will announce at least one new planned product, CA-DB:Caselink, which will provide links between several CA databases and third-part CASE tools from Index Technology, Inc. and Knowledgeware, Inc.

CA envisions an architecture consisting of layers of technology built on top of support for a wide range of vendor platforms. The distinct layers include the following:

- Distributed services for databases and servers.
- Integration services provided by CA's security products, its data dictionary and application services.
- Software solutions, which break down into three areas: information management, systems management and application solutions.
- User interface, for common graphics and reporting.

Kinder said a major thrust in CA's presentation will be to convince wary customers that there is a master plan and reveal the method behind its acquisition strategy. CA will attempt to show that "for every company they bought, there was a reason for it," Kinder said.

Customers contacted last week were skeptical that CA could pull it off. "That will be a challenge," said Rui Figuerido, manager of business application services at Bausch & Lomb, Inc. in Rochester, N.Y. "But I would be interested in hearing them out."

Jim Bulgrin, vice-president of IS at Pacific Telecom, Inc. said he commended CA's goal of providing products that span many platforms. However, he added, "no one in the industry has ever been successful in doing that. You end up being a jack-of-all-trades and master of none."

Hospitals put IS under revamp microscope

BY ELLIS BOOKER
CW STAFF

One-third of information systems executives at U.S. hospitals included in a recent survey are new at their jobs, and nearly two-thirds have re-evaluated their institution's IS strategy within the past two years.

These and other findings of the Hospital Data Processing Costs Survey, conducted late last year by consulting firm Deloitte & Touche, show an increasing reliance on information technologies at medical institutions. In recent years, hospitals have been pressed to become more efficient because of competition and new payment systems that have squeezed their profit margins.

"Probably the most significant finding was that for the same application portfolio and user-satisfaction level, hospitals are spending a wide range of money," said Paul LeFort, a partner at Deloitte & Touche in Chicago. He noted that as patient volumes increase, IS costs as a percentage of revenue go up as well.

The survey, which received responses from 70 institutions between September and October last year, found that the IS budget at most hospitals is less than 3% of revenue.

Expenditures ranged from as little as $5 to as much as $25 per patient day and were not concentrated in any one area. "The difference seemed to have more to do with how the data processing center is run and how cost-conscious it is," he said.

LeFort said the study compared expenditures in terms of an adjusted "patient day," rather than "number of beds" — the traditional yardstick for comparing hospitals. The new measure, computed by converting outpatient revenue into equivalent patient days and adding this to inpatient days, better reflects the shift toward outpatient hospital services and more accurately indicates a hospital's business costs, he said.

Another interesting finding — again underscoring the increasingly important role of IS in medical institutions — was that while the majority of IS executives continue to report to the chief financial officer, one-fourth of the respondents are reporting to the institution's chief executive officer or chief operating officer. In addition, almost one-third of the IS executives had been at their jobs fewer than three years, and just over one-fourth had held the position for under five years.

Finally, the survey found that the most profitable institutions spent twice as much — an average of $2 million annually — on information technology as their break-even counterparts.

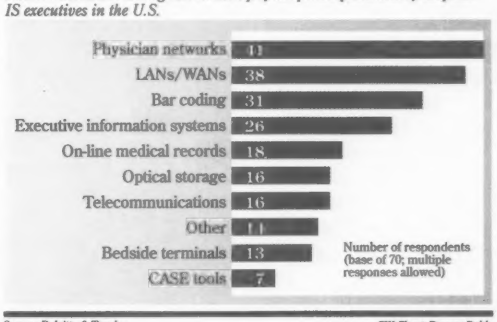
Although he was cautious about drawing the correlation, LeFort said the finding may suggest that institutions that have backed IS have gained a strategic advantage in their marketplaces. However, the survey also found that hospitals with negative operating profitability also spend, on average, slightly more on IS than do their break-even counterparts.

Bob Pickton, vice-president of management systems at Memorial Hospital in Greensboro, N.C., said the connection between profitability and IS investments may actually point to how the hospital is managed overall.

"It may be that hospitals in a more precarious situation are fighting so many other fires that information systems is at the bottom of the list, although it probably is one of those items that ought to be attacked first," Pickton said.

Technology prognosis

Networks and bar coding are at the top of the prescription lists of hospital IS executives in the U.S.



Source: Deloitte & Touche

CW Chart: Doreen Dahle

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TRENDS

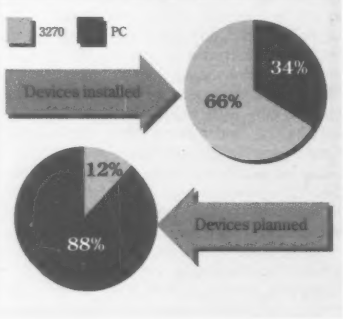
3270 TERMINALS

Though millions are still in use, the IBM 3270 family and compatible terminals are steadily surrendering market share to the higher-priced but more versatile personal computer

Monumental leap

Although 3270 terminals hold two-thirds of the terminal/workstation market today, tomorrow could be a different story; 88% of the devices planned for acquisition in the next year are PCs

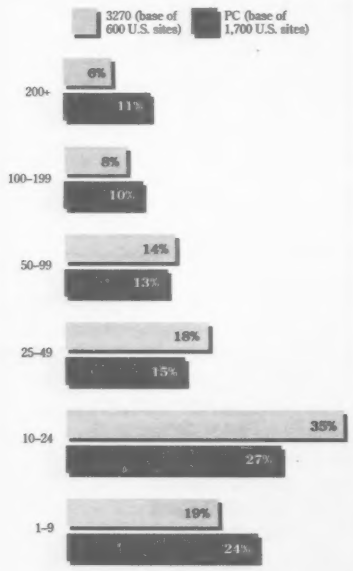
(Base of 600 3270 terminal sites and 1,700 PC sites in the U.S.)



Number of devices planned

Overall, the majority of sites plan to buy fewer machines, but it will be the personal computer that will be bought in large quantities

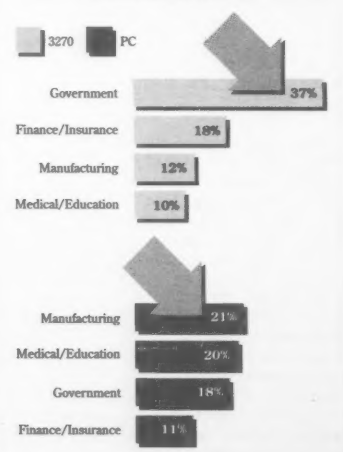
Percent of sites



Top four customers

The government will be the No. 1 purchaser of 3270s, while the manufacturing sector will be the leading PC buyer

Percent of planned devices



Source: Computer Intelligence, La Jolla, Calif.

CW Chart: Tom Monahan

NEXT WEEK

How do you merge the IS operations of five big firms spread across five states and keep that IS organization centralized and locally responsive at the same time? That was the challenge faced by Ameritech's **Glen Arnold** when the regional Bell holding company reorganized two years ago. Read Manager's Journal for a closer look at Arnold.

David Joel

Strategic alliances can make considerable business sense. However, it is not always easy to make such alliances work. In many situations, some of the stickiest negotiation points involve the care and handling of information. To find out what such arrangements entail for information systems, take a look at the Executive Report section.

INSIDE LINES

No cheap seat for this bird

While employees at Phoenix Technologies have been working hard to bring the public company out of debt, executives there have had their traveling privileges reinstated, according to a source close to the troubled firm. As of last week, every executive from vice-president on up will fly first-class when traveling on business, the source said. Last year, the perk was eliminated as a cost-cutting measure.

Spiral-bound Mac?

Seems that everyone is taking a serious look at the emerging notebook computer market these days, what with IBM recently putting some bucks behind Go Corp. Now the word is that Apple has launched an internal project to study the technology needed to create such a machine. Based on the Mac portable experience, that could take years and end up producing the fattest notebook around.

Intended Extended unbundled fumbled?

Back at Comdex/Fall '89 in November, IBM said it would make it possible to purchase its Database Manager and Communications Manager separately from OS/2 Extended Edition but could not say how and when. Six months later, there's still no word. John Soyring, Mr. Extended Edition himself, did say last week that IBM is working with its "partners" on completing some "testing." Apparently, it's testing that's taking all this time, although testing for what, he couldn't say.

Have we got a deal for you!

Andre Peterson of Wordperfect said that when first approached, his company wanted nothing to do with Lotus. In fact, the word processing mavens were not interested in a partnership with anyone. But a team of programmers sent East came back impressed — the Lotus offer to share its Presentation Manager interface was *free*! The two companies, you will recall, will offer a common interface for their PM products. "And no agreement has been signed; it's a great way to do business," Peterson said.

Cisco kids its former sidekick

Cisco is two-timing NET, its original T1 multiplexer partner. This week, the feisty little company will announce an agreement with NET rival Stratacom to develop Cisco routers with Stratacom's frame relay technology. This is supposed to be an industry first — provided Cisco ships before DEC comes out with the Decnet routers it has been working on with Stratacom since last fall.

Flacks flying out the door

When software rivals McCormack & Dodge and MSA were merged to form Dun & Bradstreet Software Services, D&B officials quickly stated that no layoffs had yet been planned. However, at least some areas of overlap are being trimmed — no surprise to many cynics. Several of Atlanta-based MSA's corporate communications and advertising staff have recently been given the proverbial pink slip, with those functions now being handled out of M&D's Natick, Mass., offices.

We've waited, and waited, and waited. . .

Back in January 1988, Apple and DEC unveiled a grand scheme to jointly develop some cross-platform connectivity products. They followed up that summer with more specific details at a developers' meeting. Since then, we've only seen specifications and some tools. Well, hold onto your hats: The word on the street is that Apple and DEC will announce some actual products May 1. Terry Shannon, a DEC analyst at International Data Corp., speculates that DEC will finally unwrap some software to provide enhanced VAX-to-Mac connectivity, probably with a version of VMS Services for the Mac.

Wordperfect, renowned in personal computer circles for its stellar support, revealed last week that it receives 14,000 support calls per day. That works out to about $1 million per month in phone bills. Sadly, we don't come even close, but we're more than willing to try. News Editor Pete Bartolik is assigned to stand by and support your news needs and can be contacted by phone (800-343-6474), MCI Mail (address: COMPUTERWORLD) or fax (508-875-8931).

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